

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re application of: Shmuel Shaffer  
Serial No.: 10/824,180  
Filing Date: April 14, 2004  
Art Unit: 2614  
Confirmation No. 6361  
Examiner: Khai N. Nguyen  
Title: *Enhanced Extension Mobility*

**Mail Stop: Appeal Brief - Patents**  
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P.O. Box 1450  
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Dear Sir:

**Appeal Brief**

Appellant has appealed to the Board of Patent Appeals and Interferences (the "Board") from the decision of the Examiner mailed April 2, 2008, finally rejecting all pending Claims 1-42. An Advisory Action was mailed July 7, 2008. Appellant filed a Notice of Appeal on August 4, 2008, with the statutory fee of \$510.00 and the amount of \$120.00 for a one-month extension of time. Appellant respectfully submits this Appeal Brief with the statutory fee of \$540.00.

**Real Party in Interest**

This Application is currently owned by Cisco Technology, Inc. as indicated by an assignment recorded on April 14, 2004, in the Assignment Records of the United States Patent and Trademark Office (PTO) at Reel 015243, Frame 0325 (5 pages).

**Related Appeals and Interferences**

To the knowledge of Appellant's counsel, there are no appeals, interferences, or judicial proceedings that are related to or will directly affect, be directly affected by, or have a bearing on the Board's decision regarding this Appeal.

**Status of Claims**

Claims 1-42 are pending in this Application and stand rejected pursuant to a Final Office Action mailed April 2, 2008 (the "Final Office Action"). Claims 1-42 are presented for appeal. All pending claims are shown in Appendix A, along with an indication of the status of those claims.

**Status of Amendments**

Claims 27-40 were rejected by the Examiner in the Final Office Action as being directed to non-patentable subject matter under 35 U.S.C. § 101. In an attempt to place the application in a better condition for allowance, to reduce issues for Appeal, and to advance prosecution, Appellant, in the Response to the Final Office Action dated June 2, 2008 (the “Final Response”), amended Claims 27-40 to be consistent with language identified by the Examiner in the Final Office Action as being directed to patentable subject matter. In the Advisory Action mailed July 7, 2008 (the “Advisory Action”), the Examiner refused to enter Appellant’s amendments, asserting that the language as amended was not supported by Appellant’s Specification. As a result, the claims presented for appeal (as shown in Appendix A) include Claims 27-40 without Appellant’s proposed amendments. Appellant discusses the Examiner’s refusal to enter the proposed amendments to Claims 27-40 in Section 1(B) below.

All other amendments submitted by Appellant have been entered by the Examiner prior to mailing the Final Office Action.

**Summary of Claimed Subject Matter**

In certain embodiments, the present invention is operable to provide enhanced extension mobility (EEM) in a communication network. FIGURE 1 illustrates one embodiment of a communication system 10 operable to provide EEM in a communication network 12. Communication networks 12a and 12b are local area networks (LANs). Communication network 12c is a public switched telephone network (PSTN). Communication networks 12 are coupled to each other using network links 14 that may each include one or more LANs, wide area networks (WANs), metropolitan area networks (MANs), portions of the Internet, PSTNs, or other network links 14 or a combination of two or more such network links 14. In particular embodiments, a contact admission control (CAC) system is used to monitor bandwidth availability over a WAN coupling two or more communication networks 12 to each other.

One or more portions of a communication network 12 may be associated with a particular enterprise or other organization. Another organization may operate one or more such portions of communication network 12 according to an outsourcing arrangement between the two organizations. In addition, one or more of portions of communication network 12 may include a private communication network 12, a virtual communication network 12, or both. One or more portions of communication network 12 may include one or more trust domains. One or more of portions of communication network 12 may be a distributed communication network 12.

A communication network 12 may include one or more network devices. A network device includes one or more hardware components, software components, or embedded-logic components or a combination of two or more such components supporting communication among multiple endpoints 16. As an example and not by way of limitation, a network device may include one or more network components, gatekeepers, contact managers, routers, hubs, switches, gateways, or endpoints 16 or a combination of two or more such devices. In particular embodiments, a network device may be an automatic contact distributor (ACD) coupled to one or more endpoints 16. An ACD includes a specialized communication system for routing incoming contacts to available agents at endpoints 16 coupled to the ACD. The ACD may route incoming contacts so that they are properly distributed among available

agents. A contact includes a request for service communicated using any audio and/or video means, including signals, data or messages transmitted through voice devices, text chat, web sessions, facsimile, instant messaging and e-mail. Network devices in a communication network 12 may be coupled to each other according to any suitable arrangement using one or more network segments. A network segment may include one or more communication networks 12, computer buses, wireline segments, optical segments, wireless segments, or other segments or a combination of two or more of such segments.

Communication networks 12 each have endpoints 16. An endpoint 16 includes one or more hardware components, software components, or embedded-logic components or a combination of two or more such components for communicating with one or more other endpoints 16. As an example and not by way of limitation, an endpoint 16 may include a phone (which may be a mobile phone, a desktop phone, or another phone), a computer (which may be a laptop computer, a desktop computer, or other computer), a personal digital assistant (PDA), a video monitor, a camera, a fax machine, or other device. An endpoint 16 may be coupled to a network device in a communication network 12 using one or more endpoint links 18 that may each include one or more computer buses, LANs, MANs, WANs, or portions of the Internet or any other appropriate wireline, optical, wireless, or other endpoint links 18. Endpoints 16 may communicate with each other using packets of data. A packet may include one or more packets, cells, frames, or other units of data. Data may include one or more data components, metadata components, executable software components, or other components.

Endpoints 16 may use one or more suitable communication protocols to communicate with each other. According to one or more such communication protocols, one or more endpoints 16 may each be identified using a unique address. In addition or as an alternative, one or more network devices may each be identified using a unique address. As an example and not by way of limitation, in particular embodiments, two or more endpoints 16 may each be identified by an Internet Protocol (IP) address and may communicate with each other using IP. In these embodiments, one or more components of system 10 may support point-to-point, multicast, unicast, or other communication. One or more endpoints 16 and network devices may support Voice over IP (VoIP) or Voice over Packet (VoP). To communicate

using VoIP or VoP, an endpoint packetizes voice data into packets communicable over one or more packet-based communication networks 12. Endpoints 16 and network devices that may support VoIP or VoP include telephones, fax machines, computers running telephony software, nodes, gateways, and other devices capable of providing telephony functionality over a packet-based communication network 12.

Communication between a first endpoint 16 and one or more second endpoints 16 may include one or more voice components, text components, executable software components, data components, or other components or a combination of two or more such components. As an example and not by way of limitation, a communication between a first endpoint 16 and one or more second endpoints 16 may include one or more instant messages (IMs). One or more endpoints 16 and network devices may support use of Session Initiation Protocol (SIP) for IM and possibly other functionality. In addition or as an alternative, one or more endpoints 16 and network devices may support use of SIP for Instant Messaging and Presence-Leveraging Extensions (SIMPLE) Protocol. In system 10, one or more voice-enabled endpoints 16 may support use of SIP and presence-related applications. In addition or as a further alternative, one or more endpoints 16 and network devices may support use of Instant Messaging and Presence Protocol (IMPP). Reference to “IM” may encompass both IM and one or more IM-related protocols.

A communication network 12 may receive incoming phone calls from first endpoints 16 and route the incoming phone calls to second endpoints 16 coupled to communication network 12. Communication network 12 may route incoming phone calls according to calling phone numbers, called phone numbers, or both. An endpoint 16 may support an extension of a user. In particular embodiments, an extension includes a number or a series of numbers corresponding to a first user. One or more second users may use the extension to contact the first user. Communication network 12 may provide extension mobility or similar functionality enabling “hotelling” or a similar feature. Such functionality may allow a user to logon at a first endpoint 16 so that first endpoint 16 supports an extension of the first user and then log off at first endpoint 16. The user may then logon at a second endpoint 16 so that second endpoint 16 supports the extension of the user, which may provide mobility to the



user in communication network 12. In particular embodiments, a user may be concurrently logged on at multiple endpoints 16.

Communication network 12a includes an EEM server 20 and EEM data 22. EEM server 20 may interact with EEM clients 24 at endpoints 16 coupled to communication network 12a to provide EEM functionality to endpoints 16, as described below. EEM server 20 and EEM clients 24 may use EEM data 22 to provide such functionality, as described below. Although EEM server 20 is illustrated and described as providing EEM functionality to endpoints 16 coupled to communication network 12a, the present invention contemplates server 20 providing EEM functionality to any suitable endpoints 16 coupled to any suitable communication networks 12. EEM client 24 may be either a thin (browser based) or a thick client.

An EEM client 24 at an endpoint 16 includes one or more hardware components, software components, or embedded logic components or a combination of two or more such components providing EEM functionality at endpoint 16, as described below. An endpoint 16 including an EEM client 24 may have a private mode and a shared mode. In private mode, endpoint 16 supports only one extension. In shared mode, endpoint 16 concurrently supports multiple extensions. An endpoint 16 may receive an incoming phone call that has a called extension corresponding to an extension supported at endpoint 16 and, in response to receiving the incoming phone call, prompt a called user of the incoming phone call to answer the incoming phone call. In particular embodiments, in private mode, endpoint 16 may receive the incoming phone call only if the called extension corresponds to the one extension supported at endpoint 16. Because endpoint 16 supports only one extension in private mode, endpoint 16 need not (but may nonetheless) identify the called extension when endpoint 16 prompts the called user to answer the incoming phone call. In particular embodiments, in shared mode, endpoint 16 may receive the incoming phone call if the called extension corresponds to any one of the multiple extensions supported at endpoint 16.

Because endpoint 16 supports multiple extensions in shared mode, endpoint 16 may identify the called extension when endpoint 16 prompts the called user to answer the incoming phone call. As an example and not by way of limitation, endpoint 16 may display

the called extension, a name of the called user, or both at a display screen of endpoint 16. As another example, endpoint 16 may audibly announce a name of the called user between rings. In particular embodiments, endpoint 16 may access a .wav or similar file to audibly announce a name of a user. The .wav or similar file may be stored in a field (such as a UserName field) in a directory in EEM data 22 and downloaded to endpoint 16 when the user logs on at endpoint 16. As another example, endpoint 16 may play a unique ring tone that identifies the called user. In particular embodiments, when a user logs on at endpoint 16, endpoint 16 may present a unique ring tone to the user so that the user will later be able to identify incoming phone calls for the user. In particular embodiments, the user may select the unique ring tone at logon.

When an outgoing phone call is placed from an endpoint 16, endpoint 16 may generate signaling data identifying a calling extension of the outgoing phone call, a calling user of the outgoing phone call, or both for communication with the outgoing phone call. In particular embodiments, in private mode, endpoint 16 may generate the signaling data according to the one extension supported at endpoint 16. In particular embodiments, in shared mode, endpoint 16 may generate the signaling data according to user input specifically identifying the calling extension. As an example and not by way of limitation, when the outgoing phone call is placed, the calling user may press a button at endpoint 16 specifically identifying the calling user. As another example, when the outgoing phone call is placed, endpoint 16 may prompt the calling user to identify the calling user. To prompt the calling user to identify the calling user, endpoint 16 may audibly announce the following menu options: "Press 1 if you are Joe. Press 2 if you are Mark." The calling user may then select the menu option corresponding to the calling user to identify the calling user. In particular embodiments, when endpoint 16 receives user input identifying the calling user, endpoint 16 may present a dial tone for placing the outgoing phone call. In particular embodiments, in private mode, endpoint 16 may generate the signaling data according to a predetermined extension. As an example and not by way of limitation, endpoint 16 may be configured so that, in shared mode, endpoint 16 generates signaling data for every outgoing phone call placed at endpoint 16 according to an extension of an owner of endpoint 16. Endpoint 16 may be located in an office of the owner of endpoint 16.

An endpoint 16 may assume one or more preferences of a user whose extension is supported at endpoint 16. To assume a preference of a user, endpoint 16 may download the preference from a profile of the user in EEM data 22 when the user logs on at endpoint 16. In particular embodiments, in private mode, endpoint 16 may assume all preferences of the one user whose extension is supported at endpoint 16. In particular embodiments, in shared mode, endpoint 16 may assume one or more preferences of one or more of the multiple users whose extensions are supported at endpoint 16. When endpoint 16 receives an incoming phone call that has a called extension corresponding to an extension of a user supported at endpoint 16, endpoint 16 may exhibit one or more preferences of that user with respect to the incoming phone call. Similarly, when a user whose extension is supported at endpoint 16 places an outgoing phone call, endpoint 16 may exhibit one or more preferences of that user with respect to the outgoing phone call. In particular embodiments, in shared mode, endpoint 16 may assume one or more preferences of only one user whose extension is supported at endpoint 16. Endpoint 16 may be configured so that, in shared mode, endpoint 16 assumes all preferences of an owner of endpoint 16 and no preferences of any other user. In particular embodiments, when a user whose extension is supported at endpoint 16 places an outgoing phone call, call detail records (CDRs) and billing information may be updated to indicate that the user made the outgoing phone call. The CDRs and billing information may be stored at EEM data 22 or elsewhere, according to particular needs.

To access EEM functionality at an endpoint 16, a user may invoke an EEM client 24 at endpoint 16. When the user invokes EEM client 24, EEM client 24 may cause endpoint 16 to provide a logon menu to the user. In particular embodiments, endpoint 16 displays the logon menu at a display screen of endpoint 16. The logon menu may prompt the user to identify the user, provide a valid password, or both to logon at endpoint 16. In particular embodiments, the logon menu prompts the user to enter an extension of the user and a password corresponding to that extension. If the user enters a valid extension and a valid password corresponding to that extension, EEM client 24 may cause endpoint 16 to provide the following menu option to the user: "Enter 1 to logon in private mode. Enter 2 to logon in shared mode." If the user selects private mode, EEM client 24 may configure endpoint 16 to support only the extension entered by the user, as described above. If the user selects shared mode, EEM client 24 may configure endpoint 16 to support the extension entered by the user

in addition to one or more other extensions already supported at endpoint 16, as described above. To configure endpoint 16 to support the extension entered by the user, EEM client 24 may establish one or more new lines or other connections at endpoint 16 for the extension entered by the user. EEM client 24 may communicate with EEM server 20 to establish the one or more new lines or other connections at endpoint 16. In addition, EEM client 24 may communicate with EEM server 20 to access EEM data 22, as described above.

FIGURE 2 illustrates an example method for EEM. The method begins at step 100, where a user invokes an EEM client 24 at an endpoint 16. At step 102, endpoint 16 prompts the user to enter an extension and a password. At step 104, the user enters an extension and a password. At step 106, endpoint 16 determines whether the extension and the password are valid. If the extension or the password is invalid, the method returns to step 102. If the extension and the password are valid, the method proceeds to step 108, where endpoint 16 prompts the user to select private mode or shared mode. At step 110, the user selects private mode or shared mode. At step 112, endpoint 16 determines whether the user selected private mode. If the user selected private mode, the method proceeds to step 114. At step 114, EEM client 24 configures endpoint 16 to support only the extension entered by the user at step 104, at which point the method ends. Returning to step 112, if the user did not select private mode, the method proceeds to step 116. At step 116, endpoint 16 determines whether the user selected shared mode. If the user selected shared mode, the method proceeds to step 118, where EEM client 24 configures endpoint 16 to support the extension entered by the user at step 104 in addition to one or more other extensions of one or more other users already supported at endpoint 16, at which point the method ends. Returning to step 116, if the user did not select shared mode, the method returns to step 108.

With regard to the independent claims currently under Appeal, Appellant provides the following concise explanation of the subject matter recited in the claim elements. For brevity, Appellant does not necessarily identify every portion of the Specification and drawings relevant to the recited claim elements. Additionally, this explanation should not be used to limit Appellant's claims but is intended to assist the Board in considering the Appeal of this Application.

For example, independent Claim 1 recites the following:

A system for enhanced extension mobility (*see, e.g.*, Fig. 1; Spec. at 3:4; and 6:2-10:22) the system comprising one or more processing units collectively operable to:

access user input (*see, e.g.*, Fig. 2; Spec. at 3:5-9) indicating either:

a desire of a user to logon at an endpoint in a private mode according to which the endpoint supports only an extension of the user, wherein the user can be concurrently logged on at multiple endpoints (*see, e.g.*, Fig. 2; Spec. at 3:9-11; 9:19-11:7); or

a desire of the user to logon at the endpoint in a shared mode according to which the endpoint concurrently supports an extension of the user and one or more other extensions of one or more other users (*see, e.g.*, Fig. 2; Spec. at 9:19-11:23);

if the user input indicates a desire of the user to logon at the endpoint in a private mode according to which the endpoint supports only an extension of the user, configure the endpoint to support only an extension of the user (*see, e.g.*, Fig. 2; Spec. at 11:23-14:2; 14:8-29) and

if the user input indicates a desire of the user to logon at the endpoint in a shared mode according to which the endpoint concurrently supports an extension of the user and one or more other extensions of one or more other users, configure the endpoint to concurrently support an extension of the user and one or more other extensions of one or more other users (*see, e.g.*, Fig. 2; Spec. at 11:23-14:2; 14:8-29).

The citations listed above with respect to independent Claim 1 are also applicable using substantially similar mapping to independent Claim 15, directed to a method, independent Claim 27, directed to logic, and independent Claim 41, directed to a system.

As another example, independent Claim 42 recites the following:

A system for enhanced extension mobility (*see, e.g.*, Fig. 1; Spec. at 3:4; 6:2-10:22), the system comprising one or more processing units located at an endpoint and collectively operable to:

access user input (*see, e.g.*, Fig. 2; Spec. at 3:5-9) indicating either:

a desire of a user to logon at the endpoint in a private mode according to which the endpoint supports only an extension of the user, wherein the user can be concurrently logged on at multiple endpoints (*see, e.g.*, Fig. 2; Spec. at 3:9-11; 9:19-11:7); or

a desire of the user to logon at the endpoint in a shared mode according to which the endpoint concurrently supports an extension of the user and one or more other extensions of one or more other users (*see, e.g.*, Fig. 2; and Spec. at 9:19-11:23);

if the user input indicates a desire of the user to logon at the endpoint in a private mode according to which the endpoint supports only

an extension of the user, configure the endpoint to support only an extension of the user and configure the endpoint according to one or more preferences of the user (*see, e.g.*, Fig. 2; Spec. at 11:23-14:2; 14:8-29 );

if the user input indicates a desire of the user to logon at the endpoint in a shared mode according to which the endpoint concurrently supports an extension of the user and one or more other extensions of one or more other users, configure the endpoint to concurrently support an extension of the user and one or more other extensions of one or more other users (*see, e.g.*, Fig. 2; Spec. at 11:23-14:2; 14:8-29);

in response to an incoming phone call received at the endpoint, indicate a called extension of the incoming phone call if the endpoint is concurrently supporting multiple extensions of multiple users (*see, e.g.*, Spec at 10:24-11:23);

if the endpoint is concurrently supporting multiple extensions:

prompt a user to enter a calling extension of an outgoing phone call from the endpoint (*see, e.g.*, Spec. at 11:24-12:16); and

generate signaling data for communication with the outgoing phone call that identifies the entered calling extension (*see, e.g.*, Spec. at 11:24-12:16).

**Grounds of Rejection to be Reviewed on Appeal**

1. Are Claims 27-40 directed to patentable subject matter under 35 U.S.C. § 101?
2. Are Claims 1-8, 10-20, 22-34, and 36-42 patentable under 35 U.S.C. § 103(a) over the Examiner's proposed combination of U.S. Patent 6,577,726 to Huang et. al. ("*Huang*") and U.S. Patent 6,035,404 to Zhao ("*Zhao*")?
3. Are Claims 9, 21, and 35 patentable under 35 U.S.C. § 103(a) over the Examiner's proposed combination of *Huang*, *Zhao* and U.S. Patent 5,933,488 to Marcus et. al. ("*Marcus*")?

**Argument**

For at least the following reasons, the Examiner's rejections of Claims 1-42 are improper and should be reversed by the board.

**I. Issue 1 – Claims 27-40 Recite Patentable Subject Matter**

**A. Overview**

Claims 27-40 stand rejected under 35 U.S.C. § 101 as being directed to non-statutory subject matter. Appellant respectfully submits that these rejections are improper and should be reversed by the Board.

**B. Claims 27-40 Recite Patentable Subject Matter**

Independent Claim 27 is directed to “logic encoded in media” that when executed is operable to perform the limitations recited in the body of the claim.

The United States Court of Appeals for the Federal Circuit has recently stated that 35 U.S.C. § 101 “explains that an invention includes ‘any new and useful process, machine, manufacture or composition of matter.’ *Without question, software code alone qualifies as an invention eligible for patenting* under these categories, at least as processes.” *Eolas Technologies, Inc. v. Microsoft Corp.*, 399 F.3d 1325, 1338-39 (Fed. Cir. 2005) (citations omitted) (emphasis added). Using substantially similar reasoning as used by the Federal Circuit in *Eolas* with regard to software, Appellant asserts that “logic encoded in media” constitutes patentable subject matter. Thus, Appellant respectfully submits that Claim 27 and its dependent claims are plainly statutory. For at least these reasons, Appellant submits that the rejections of Claims 27-40 are improper and should be reversed by the Board.

In the Final Office Action, the Examiner stated that Claims 27-40 were not directed to patentable subject matter because “the claims fail to recite ‘A computer readable medium encoded with logic . . .’” (*Final Office Action*, p. 2). In the Final Response, Appellant proposed amendments to independent Claim 27 and its dependent claims to make them consistent with the Examiner's suggested language, believing that the amendment would place the Application in better condition for allowance and/or reduce issues for Appeal.



(*Final Response*, p. 7-9, 12). The proposed amendment to independent Claim 27 appeared as follows:

~~Logic~~ A computer-readable medium encoded with logic for enhanced extension mobility, the logic ~~eneoded in media and~~ when executed operable to:

access user input indicating either:

a desire of a user to logon at an endpoint in a private mode according to which the endpoint supports only an extension of the user, wherein the user can be concurrently logged on at multiple endpoints; or

a desire of the user to logon at the endpoint in a shared mode according to which the endpoint concurrently supports an extension of the user and one or more other extensions of one or more other users;

if the user input indicates a desire of the user to logon at the endpoint in a private mode according to which the endpoint supports only an extension of the user, configure the endpoint to support only an extension of the user; and

if the user input indicates a desire of the user to logon at the endpoint in a shared mode according to which the endpoint concurrently supports an extension of the user and one or more other extensions of one or more other users, configure the endpoint to concurrently support an extension of the user and one or more other extensions of one or more other users.

Corresponding amendments were also proposed to dependent claims 28-40 to make those claims consistent with the amendment to independent Claim 27.

In the Advisory Action, the Examiner refused to enter Appellant's proposed amendments, asserting that "the claimed language 'a computer readable medium encoded with logic' appears to have no support in the [appellant's] specification." (*Advisory Action*, p. 2). Claim 27 as originally filed and as presented on appeal is directed to "Logic encoded in media . . ." (*see* Appendix A). In addition, Appellant's specification is replete with discussion of various computer components in describing the various embodiments of the claimed invention. (*see, e.g.,* Spec. at 7:21-24; 8:1-17; 9:1-4). Taking into account both the original claim language directed to "logic encoded in media" and the abundant discussion of computer components in the Specification, one of ordinary skill in the art would understand that the "media" recited in Claim 1 includes a computer readable media. Because one of ordinary skill in the art would understand that "media" includes a computer readable medium, Appellant asserts that the claim language "a computer readable medium encoded with logic . . ." is supported by the specification.

Despite the Appellant's belief for the reasons discussed above that Claims 27-40 recite patentable subject matter in their current form, should the Board disagree, Appellant remains willing to make the proposed amendments to Claims 27-40. Because the proposed amendments are supported by the Specification, if appropriate Appellant submits that the Board should instruct the Examiner to enter the proposed amendments and the 35 U.S.C. §101 rejections with regard to those claims should be withdrawn.

## **II. Issue 2 – Claims 1-8, 10-20, 22-34, and 36-42 are Patentable over the Proposed *Huang-Zhao* Combination**

### **A. Overview**

Claims 1-8, 10-20, 22-34, and 36-42 (of which Claims 1, 15, 27, and 41-42 are independent claims) stand rejected under 35 U.S.C. § 103(a) as being unpatentable over the proposed *Huang-Zhao* combination. Copies of *Huang* and *Zhao* are attached as Appendices B and C, respectively. Appellant respectfully submits that the Examiner's proposed *Huang-Zhao* combination fails to support the obviousness rejection of these claims. Appellant respectfully submits that these rejections are therefore improper and should be reversed by the Board.

### **B. Legal Standard for Demonstrating a *Prima Facie* Case of Obviousness**

The question raised under 35 U.S.C. § 103 is whether the prior art taken as a whole would suggest the claimed invention taken as a whole to one of ordinary skill in the art at the time of the invention. "To establish *prima facie* obviousness of a claimed invention, ***all the claim limitations*** must be taught or suggested by the prior art." *In re Royka*, 490 F.2d 981, 180 U.S.P.Q. 580 (C.C.P.A. 1974). "***All words*** in a claim must be considered in judging the patentability of that claim against the prior art." M.P.E.P. ch. 2143.03 (emphasis added); *see also In re Wilson*, 424 F.2d 1382, 1385, 165 U.S.P.Q. 494, 496 (C.C.P.A. 1970).

In addition, even if all elements of a claim are disclosed in various prior art references, which is certainly not the case here as discussed below, the claimed invention taken as a whole still cannot be said to be obvious without some reason why one of ordinary skill at the time of the invention would have been prompted to modify the teachings of a reference or combine the teachings of multiple references to arrive at the claimed invention.

The controlling case law, rules, and guidelines repeatedly warn against using an applicant's disclosure as a blueprint to reconstruct the claimed invention. For example, the M.P.E.P. states, "The tendency to resort to 'hindsight' based upon applicant's disclosure is often difficult to avoid due to the very nature of the examination process. However, impermissible hindsight must be avoided and the legal conclusion must be reached on the basis of the facts gleaned from the prior art." M.P.E.P. ch. 2142. Furthermore, "[t]he factual inquiry whether to [modify] references must be thorough and searching." *In re Sang-Su Lee*, 277 F.3d 1338, 1343 (Fed. Cir. 2002). Any "conclusory statements . . . do not adequately address the issue of motivation to combine." *Id.*

The U.S. Supreme Court's recent decision in *KSR Int'l Co. v. Teleflex, Inc.* reiterated the requirement that examiners provide an explanation as to why the claimed invention would have been obvious. *KSR Int'l Co. v. Teleflex, Inc.*, 127 S.Ct. 1727 (2007). The analysis regarding an apparent reason to combine the known elements in the fashion claimed in the patent at issue "should be made explicit." *KSR*, 127 S.Ct. at 1740-41. "Rejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness." *Id.* at 1741 (internal quotations omitted).

The new examination guidelines issued by the United States Patent and Trademark Office ("PTO") in response to the *KSR* decision further emphasize the importance of an explicit, articulated reason why the claimed invention is obvious. Those guidelines state, in part, that "[t]he key to supporting any rejection under 35 U.S.C. 103 is the clear articulation of the reason(s) why the claimed invention would have been obvious. The Supreme Court in *KSR* noted that the analysis supporting a rejection under 35 U.S.C. 103 should be made explicit." *Examination Guidelines for Determining Obviousness Under 35 U.S.C. 103 in View of the Supreme Court Decision in KSR International Co. v. Teleflex Inc.*, 72 Fed. Reg. 57526, 57528-29 (Oct. 10, 2007) (internal citations omitted). The guidelines further describe a number of rationales that, in the PTO's view, can support a finding of obviousness. *Id.* at 57529-34. The guidelines set forth a number of particular findings of fact that must be made

and explained by the Examiner to support a finding of obviousness based on one of those rationales. *See id.*

**C. Independent Claims 1, 15, 29, and 41 (and their respective dependent claims) are Allowable**

Claim 1, which Appellant discusses as an example, recites:

A system for enhanced extension mobility, the system comprising one or more processing units collectively operable to:

access user input indicating either:

a desire of a user to logon at an endpoint in a private mode according to which the endpoint supports only an extension of the user, wherein the user can be concurrently logged on at multiple endpoints; or

a desire of the user to logon at the endpoint in a shared mode according to which the endpoint concurrently supports an extension of the user and one or more other extensions of one or more other users;

if the user input indicates a desire of the user to logon at the endpoint in a private mode according to which the endpoint supports only an extension of the user, configure the endpoint to support only an extension of the user; and

if the user input indicates a desire of the user to logon at the endpoint in a shared mode according to which the endpoint concurrently supports an extension of the user and one or more other extensions of one or more other users, configure the endpoint to concurrently support an extension of the user and one or more other extensions of one or more other users.

The proposed *Huang-Zhao* combination fails to disclose, teach, or suggest at least the following limitations recited in Claim 1:

- accessing user input indicating a desire of the user to logon at the endpoint in a shared mode according to which ***the endpoint concurrently supports an extension of the user and one or more other extensions of one or more other users***; and
- if the user input indicates a desire of the user to logon at the endpoint in a shared mode according to which the endpoint concurrently supports an extension of the user and one or more other extensions of one or more other users, ***configure the endpoint to concurrently support an extension of the user and one or more other extensions of one or more other users***.

As allegedly disclosing these limitations, the Examiner apparently relies on *Huang*. (See Final Office Action at 3-4). The cited portions of *Huang* appear to merely disclose that multiple users can share a single telephone. However, the cited portions of *Huang* do not

appear to disclose, teach, or suggest that the users can share a single telephone concurrently. In particular, the cited portions do not appear to disclose, teach, or suggest that “the endpoint *concurrently* supports an extension of the user and one or more other extensions of one or more other users,” as recited in Claim 1. Additionally, the cited portions of *Huang* do not appear to disclose, teach, or suggest “configur[ing] the endpoint to *concurrently* support an extension of the user and one or more other extensions of one or more other users,” as recited in Claim 1. None of the examples discussed throughout *Huang* appear to contemplate such functionality. (See, e.g., *Huang* at 2:22-3:67) Taking the example of “[s]hared telesets” at the bottom of column 3, for example, it is clear that the agents do not share a single teleaset concurrently; rather, the agents share a single teleaset such that each agent uses the single teleaset during that agent’s eight-hour shift.

In response to the above arguments, the Examiner stated the following:

The Examiner respectfully disagrees with the [Appellant’s] argument because Huang clearly discloses that the endpoint concurrently supports an extension of the user and one or more other extensions of one or more other users (See Huang column 1 lines 30-33, and lines 37-40, i.e., implemented hotelling feature to share endpoints among multiple users “concurrently supports an extension of the user and one or more other extensions”, and see Fig. 1, Client 11-13 Hotel Enabled). Huang also discloses the user can transfer a call and the information associated with the call to another user (See Huang column 1 lines 58-61). Therefore, the limitation “concurrently supports an extension of the user and one or more other extensions” in claim 1 is anticipated by Huang.

(*Advisory Action*, p. 2).

The Examiner’s response, however, fails to resolve any of the above-discussed deficiencies with regard to *Huang*. As was the case in the Final Office Action, the portions of *Huang* cited by the Examiner in the Advisory Action appear to merely disclose that multiple users can share a single telephone, not that the multiple users can share the single telephone concurrently. Consequently, the Examiner still has not identified any portion of *Huang* that would appear to disclose, teach, or suggest that “the endpoint *concurrently* supports an extension of the user and one or more other extensions of one or more other users,” as recited in Claim 1. Additionally, the Examiner has cited no additional portion of *Huang* in the Advisory Action that would appear to disclose, teach, or suggest “configur[ing] the endpoint to *concurrently* support an extension of the user and one or more other

extensions of one or more other users,” as recited in Claim 1. Thus, considering both the Examiner’s arguments in the Final Office Action and the Advisory Action, Appellant maintains that the cited portions of *Huang* fail to disclose, teach, or suggest at least the above-discussed limitations recited in Claim 1.

In the Advisory Action, the Examiner (for the first time) also cited to portions of *Zhao* and *Marcus* as allegedly disclosing the above-discussed limitations of Claim 1 that have been shown to be lacking in *Huang*. In the Advisory Action, the Examiner stated the following with regard to *Zhao* and *Marcus*<sup>1</sup>:

In addition, *Zhao* (US PAT 6,035,404) disclose the user can be concurrently logged onto the system (See *Zhao* - Figs. 1-2, Fig. 7, column 2 lines 9-13), and *Marcus* et. al. (US PAT 5,933,488 hereinafter “*Marcus*”) discloses an announcement system supports multiple telephone units (See *Marcus* Fig. 1, column 3 lines 10-14, column 4 lines 33-40).

The cited portions of *Zhao* appear to disclose that multiple users can be concurrently logged on to a system using a common account, wherein those users are *logged on at different endpoints*. Claim 1, however, recites that “the *endpoint concurrently supports* an extension of the user and one or more other extensions of one or more other users.” Because *Zhao* does not disclose that multiple users may logged on at a single endpoint, *Zhao* fails to disclose, teach or suggest that “the endpoint *concurrently* supports an extension of the user and one or more other extensions of one or more other users,” as recited in Claim 1. Additionally, Claim 1 recites that the endpoint can be configured to “*concurrently* support an extension of the user and one or more other extensions of one or more other users.” Again, because *Zhao* does not disclose that multiple users may logged on at a single endpoint, *Zhao* fails to disclose, teach or suggest “configur[ing] the endpoint to *concurrently* support an extension of the user and one or more other extensions of one or more other users,” as recited in Claim 1. Because *Zhao*, at a minimum, fails to disclose, teach, or suggest the above-discussed limitations recited in Claim 1, it cannot make up for the same deficiencies in *Huang* outlined above.

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<sup>1</sup> The Examiner has never specifically rejected independent Claim 1 based on *Marcus*, either alone or in combination with *Huang* and *Zhao*. However, for the sake of providing a complete response to the Examiner’s comments in the Advisory Action, Appellant addresses Examiners discussion of *Marcus* in the Advisory Action with regard to Claim 1. A copy of *Marcus* is attached in Appendix D.

The cited portions of *Marcus* appear to merely discuss multiple endpoints (telephones) being connected to a common voicemail/announcement system. (See *Marcus* at 2:66-3:17). In other words, the cited portion of *Marcus* merely discloses that multiple endpoints (telephones) may be connected to a single voicemail system, not that a single endpoint can concurrently support the extensions of multiple users, as recited in Claim 1. Thus, the portion of *Marcus* cited by the Examiner in the Advisory Action fails to disclose, teach, or suggest that “the endpoint ***concurrently*** supports an extension of the user and one or more other extensions of one or more other users,” as recited in Claim 1. Similarly, the portion of *Marcus* cited by the Examiner in the Advisory Action fails to disclose, teach, or suggest “configur[ing] the endpoint to ***concurrently*** support an extension of the user and one or more other extensions of one or more other users,” as recited in Claim 1. Because *Marcus*, at a minimum, fails to disclose, teach, or suggest the above-discussed limitations recited in Claim 1, it cannot make up for the same deficiencies in *Huang* outlined above.

Furthermore, even assuming for the sake of argument only and not by way of concession that the proposed *Huang-Zhao* combination did disclose each limitation recited in Claim 1, Appellant submits that the Examiner still has not demonstrated a *prima facie* case of obviousness because the Examiner has not provided an adequate reason either in the cited references or in the knowledge generally available to one of ordinary skill in the art at the time of Applicant’s invention to combine or modify the references in the manner proposed by the Examiner. As allegedly providing a reason for the proposed *Huang-Zhao* combination, the Examiner states the following:

[I]t would have been obvious to a person of ordinary skill in the art at the time the invention was made to apply a known technique to a known device (i.e., concurrently logged on to a computer telephony integration system) ready for improvement to yield predictable results (see KSR - MPEP 2143). Therefore, it would have been obvious to a person of ordinary skill in the art to incorporate the user can be concurrently logged on, as taught by Zhao, into the method and system of Huang in order to enhance the extension mobility.

(*Final Office Action*, p. 4-5) (emphasis in original).

The Examiner has merely provided a conclusory assertion that the proposed combination would have been possible and obvious. For example, the Examiner has

provided no support for the assertions that “the device [was ready] for improvement” or that the resulting combination would “yield predictable results.” A mere conclusory assertion that this is the case certainly does not satisfy the Examiner’s burden for demonstrating a *prima facie* case of obviousness. “Rejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.” *Id.* at 1741 (internal quotations omitted). “The factual inquiry whether to [modify] references must be thorough and searching.” *In re Sang-Su Lee*, 277 F.3d 1338, 1343 (Fed. Cir. 2002). The Examiner’s identification of a perceived advantage of one of the references does not provide an adequate “factual inquiry.” The Examiner does not give any technical reasoning as to why or how the improvement could have been achieved, nor does the Examiner state how these systems can be combined and, if combined, would be successfully combined. Thus, this reasoning surely cannot be said to be “thorough and searching.”

Respectfully, the Examiner’s attempt to combine *Huang* with *Zhao* appears to constitute the type of impermissible hindsight reconstruction of Appellant’s claims, using Appellant’s claims as a blueprint, that is specifically prohibited by the M.P.E.P. and governing Federal Circuit cases.

For at least these reasons, Appellant respectfully submits that this rejection of independent Claim 1 and its dependent claims is improper and should be reversed by the Board. For at least certain analogous reasons, Appellant submits that these rejections of independent Claims 25, 29, and 41 and their dependent claims are improper and should be reversed by the Board.

### **C. The Dependent Claims are Allowable**

Appellant’s dependent claims are allowable at least because they depend on independent claims that Appellant has shown above to be allowable over the proposed *Huang-Zhao* combination and the Examiner does not allege that the additional references cited with respect to the dependent claims make up for the deficiencies discussed above. The dependent claims also recite further patentable limitations over the proposed *Huang-Zhao* combination. Appellant discusses below particular example dependent claims.



**1. Claims 4, 16, and 30**

Dependent Claim 4, which Appellant discusses as an example, recites:

The system of Claim 1, wherein the one or more processing units are operable to:  
prompt the user to select between private mode and shared mode at the endpoint; and  
receive a selection by the user of either private mode or shared mode at the endpoint,  
the selection providing the user input.

The proposed *Huang-Zhao* combination fails to disclose, teach, or suggest both elements recited in Claim 4. In the Final Office Action, the Examiner cites *Huang* as allegedly disclosing these elements. The cited portion of *Huang* states the following:

During startup the system checks for a valid user while marking a hotelling flag "false." If no valid user is found, the system updates the hostname field for tracking and hostname. If a valid user is found, the hotelling flag is set to "true" and hotelling is enabled.

(*Huang* at 5:37-41).

The cited portion of *Huang* merely discloses a logon procedure during which the hotelling flag is marked false until an authorized user logs on to the system, at which point the hotelling flag is marked true. *Huang* does not disclose the private/shared mode distinction as recited in Claim 4 because, in *Huang*, a user attempts to log on and is either allowed or denied access (there is no disclosure of any choice of modes in *Huang*). Therefore, *Huang* fails to disclose, teach, or suggest "prompt[ing] the user to select between private mode and shared mode at the endpoint," as recited in Claim 4. Similarly, because the procedure described in *Huang* does not provide for any choice of modes once a user logs on to the system, *Huang* necessarily fails to disclose, teach or suggest "receiv[ing] a selection by the user of either private mode or shared mode at the endpoint," as recited in Claim 4.

As *Huang* does not disclose, teach, or suggest either further patentable limitation recited in Claim 4 for the reasons discussed above, and *Zhao* is not alleged to make up for these deficiencies of *Huang*, Claim 4 is clearly patentable over proposed *Huang-Zhao* combination. Dependent Claims 16 and 30 are allowable for at least certain analogous reasons. For at least these reasons, Appellant submits that the rejections of Claims 4, 16, and 30 are improper and should be reversed by the Board.

## 2. Claims 10, 22, and 36

Dependent Claim 10, which Appellant discusses as an example, recites:

The system of Claim 7, wherein the one or more processing units are operable to play a ring tone corresponding to the called extension to indicate the called extension.

The proposed *Huang-Zhao* combination fails to disclose, teach, or suggest the element recited in Claim 4. In the Final Office Action, the Examiner cites *Huang* as allegedly disclosing this element. The cited portion of *Huang* merely states that a member of a sales team may log into the CTI server from a particular hotelling enabled telephone and select a party to call from the CTI server database. (*Huang* at 3:35-44). With the party to be called selected, the CTI Server dials the appropriate number and the sales team member picks up the handset when it starts ringing so that the team member can talk to the previously identified party to be called (See *Id.* at 3:43-46). The ring tone disclosed in *Huang* is in response to *an outgoing call* and merely indicates that the CTI server has dialed the selected number. In contrast, the ring tone recited in Claim 10 is in response to *an incoming call* and provides a technique for identifying which of the concurrent users of a single endpoint the call is intended for. Thus, *Huang* does not disclose, teach, or suggest “one or more processing units [being] operable to play a ring tone corresponding to the called extension to indicate the called extension,” as recited in Claim 10.

As *Huang* does not disclose, teach, or suggest the further patentable limitation recited in Claim 10 for the reasons discussed above, and *Zhao* is not alleged to make up for this deficiency of *Huang*, Claim 10 is clearly patentable over proposed *Huang-Zhao* combination. Dependent Claims 22 and 36 are allowable for at least certain analogous reasons. For at least these reasons, Appellant submits that the rejections of Claims 10, 22, and 36 are improper and should be reversed by the Board.

## E. Independent Claim 42 is Allowable

Independent Claim 42 recites the following:

A system for enhanced extension mobility, the system comprising one or more processing units located at an endpoint and collectively operable to:

access user input indicating either:

a desire of a user to logon at the endpoint in a private mode according to which the endpoint supports only an extension of the user, wherein the user can be concurrently logged on at multiple endpoints; or

a desire of the user to logon at the endpoint in a shared mode according to which the endpoint concurrently supports an extension of the user and one or more other extensions of one or more other users;

if the user input indicates a desire of the user to logon at the endpoint in a private mode according to which the endpoint supports only an extension of the user, configure the endpoint to support only an extension of the user and configure the endpoint according to one or more preferences of the user;

if the user input indicates a desire of the user to logon at the endpoint in a shared mode according to which the endpoint concurrently supports an extension of the user and one or more other extensions of one or more other users, configure the endpoint to concurrently support an extension of the user and one or more other extensions of one or more other users.

in response to an incoming phone call received at the endpoint, indicate a called extension of the incoming phone call if the endpoint is concurrently supporting multiple extensions of multiple users;

if the endpoint is concurrently supporting multiple extensions:

prompt a user to enter a calling extension of an outgoing phone call from the endpoint; and  
generate signaling data for communication with the outgoing phone call that identifies the entered calling extension.

The cited portions of the proposed *Huang-Zhao* combination fail to disclose, teach, or suggest various limitations recited in Claim 42. For example, for at least certain reasons analogous to those discussed above with reference to Claim 1, the cited portions of the proposed *Huang-Zhao* combination fail to disclose, teach, or suggest the limitations related to the shared mode, as recited in Claim 42.

As another example, the portions of the proposed *Huang-Zhao* combination fail to disclose, teach, or suggest the following limitations recited in Claim 42:

- if the endpoint is concurrently supporting multiple extensions:  
prompt a user to enter a calling extension of an outgoing phone call from the endpoint; and  
generate signaling data for communication with the outgoing phone call that identifies the entered calling extension.

As allegedly disclosing these limitations, the Examiner cites column 3, lines 40-48 of *Huang*. (Final Office Action, p. 12). The cited portion of *Huang* discloses an example in

which a sales team member visits a sales office and selects a vacant office. (*Huang* at 3:31-32) In the example, the sales team member comes into the office to make follow-up calls to contacts associated with his accounts. (*Id.* at 35-37) He then logs on to the company's CTI-enabled server, navigates to the Accounts screen, and clicks on the hyperlink of the account of interest. (*Id.* at 37-40) He then selects from the Account Contact view contacts with whom he wants to follow up. (*Id.* at 40-41) Once the individual is selected, he clicks the right mouse button on the contact and selects the Make Call option from the pop-up menu. (*Id.* at 41-44) The CTI server dials the contact and the sales team member picks up the telephone handset when the phone is ringing. (*Id.* at 44-46) While the sales team member is in the office, he is able to accept inbound calls from his workspace with the CTI toolbar, menu items, and/or shortcuts. (*Id.* at 47-49) However, nowhere does the cited portion disclose, teach, or suggest the above-identified limitations of Claim 42.

First, as allegedly disclosing the limitation "if the endpoint is concurrently supporting multiple extensions," as recited in Claim 42, the Examiner identifies the statement the disclosure of the sales team member being able to accept inbound calls from his workspace while in the office. (*See Final Office Action* at 12 citing *Huang* at 3:46-48) However, this cited portions does not disclose an endpoint concurrently supporting multiple extensions. Rather, it simply discloses telephone at a workspace accepting calls for the single sales team member. Additionally, since *Huang* fails to disclose this "if" condition, *Huang* necessarily fails to disclose the remaining limitations of the claim that are based off this "if" condition.

Second, as allegedly disclosing "prompt[ing] a user to enter a calling extension of an outgoing phone call from the endpoint," the Examiner identifies the Make Call option in *Huang*. (*See Final Office Action* at 12 citing *Huang* at 3:40-43) However, the Make Call option as disclosed in *Huang* merely discloses a user selecting a called party [*i.e.*, the selected contact]. There is no selection of a **calling party** in the cited portion.

Third, as allegedly disclosing "generat[ing] signaling data for communication with the outgoing phone call that identifies the entered calling extension," the Examiner cites the disclosure in *Huang* of the CTI server dialing the contact. (*See Final Office Action* at 12 citing *Huang* at 3:40-43) However, the this cited portion fails to disclose, teach, or suggest

“generat[ing] signaling data for communication with the outgoing phone call that identifies the entered *calling extension*,” as recited in Claim 42.

In response to the above arguments, the Examiner stated the following:

The Examiner respectfully disagrees with the [Appellant’s] argument because . . . Huang clearly discloses the endpoint concurrently supporting multiple extensions (See Fig. 1, Client 11, 13 Hoteling Enabled, Client 12 Without Hoteling, and see Huang column 1 lines 30-33 and lines 37-40, i.e., implemented hoteling feature to share endpoints among multiple users “concurrently supports an extension of the user and one or more other extensions”).

(*Advisory Action*, p. 2).

Again, the Examiner has cited to portions of *Huang* that appear to merely disclose that multiple users can share a single telephone, not that the multiple users can share the single telephone concurrently. (See *Huang* 1:30-40). As such, the Examiner has cited nothing in the *Advisory Action* that would make up for the above-discussed deficiencies of *Huang*. Additionally, the Examiner has not cited to any portion of *Zhao* that would appear to make up for the above discussed deficiencies of *Huang*.

Furthermore, even assuming for the sake of argument only and not by way of concession that the proposed *Huang-Zhao* combination did disclose each limitation recited in Claim 42, Appellant submits that the Examiner still has not demonstrated a *prima facie* case of obviousness because the Examiner has not provided an adequate reason either in the cited references or in the knowledge generally available to one of ordinary skill in the art at the time of Applicant’s invention to combine or modify the references in the manner proposed by the Examiner. The Examiner provides the same statement as discussed above with regard to Claim 1 as allegedly providing a reason for the proposed *Huang-Zhao* combination.

Appellant reiterates that the Examiner’s statement amounts to a conclusory assertion that the proposed *Huang-Zhao* combination would have been obvious. Respectfully, the Examiner’s attempt to combine *Huang* with *Zhao* appears to constitute the type of impermissible hindsight reconstruction of Appellant’s claims, using Appellant’s claims as a blueprint, that is specifically prohibited by the M.P.E.P. and governing Federal Circuit cases.

For at least these reasons, Appellant submits that the rejection of Claims 42 is improper and should be reversed by the Board.

**III. Issue 3 – Claims 9, 21, and 35 are Patentable over the Proposed *Huang-Zhao-Marcus* Combination**

Claims 9, 21, and 35 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over the Examiner's proposed combination of *Huang and Zhao*, as applied to Claims 7, 19 and 33, and further in view of *Marcus*. A copy of *Marcus* is attached as Appendix D. Appellant respectfully submits that these rejections are improper and should be reversed by the Board.

Claim 9, which Appellant discusses as an example, recites:

The system of Claim 7, wherein the one or more processing units are operable to audibly announce a name of a called user of the incoming phone call to indicate the called extension.

Claims 9 depends from independent Claims 1, which Appellant has shown above to be allowable over the proposed *Huang-Zhao* combination. The Examiner does not allege that *Marcus* makes up for the above-discussed deficiencies of the proposed *Huang-Zhao* combination. Therefore, dependent Claims 9 is allowable at least because it depends from allowable independent Claim 1.

Furthermore, even assuming for the sake of argument only and not by way of concession that the proposed *Huang-Zhao* combination did disclose each limitation recited in Claim 1, Claim 9 recites the additional patentable limitation of "one or more processing units . . . audibly announc[ing] a name of a called user of the incoming phone call to indicate the called extension." In the Final Office Action, the Examiner states that "Huang does not disclose expressly to audibly announce a name of a called user of the incoming phone call to indicate the called extension." (*Final Office Action*, p. 13). The Examiner then asserts that *Marcus* makes up for this deficiency in *Huang*, stating that "Marcus discloses the system, method, and logic to automate an announcement system for a facility having multiple telephone units and the audible announcement identifies the called party of the incoming phone call to indicate the called extension." (Internal quotations omitted; *Final Office*

*Action*, p. 13). The portions of *Marcus* cited by the Examiner are directed to “an announcement system to provide paging capability . . .,” specifically wherein “[t]he audible announcement identifies the availability of the call for retrieval by a particular called party.” (*Marcus* at 2:66-3:14). In other words, the system disclosed in *Marcus* simply provides an audible announcement to notify a user that his particular endpoint (telephone) has received a call, not to notify one of a number of users of a single endpoint that a call being received at that endpoint is intended for that particular user. As a result, *Marcus* does not disclose, teach, or suggest “one or more processing units . . . audibly announc[ing] a name of a called user of the incoming phone call to indicate the called extension” as recited in Claim 7.

Additionally, Appellant does not admit that the proposed *Huang-Zhao-Marcus* combination is possible or that the Examiner has provided an adequate reason in the cited references or in the knowledge generally available to one of ordinary skill in the art at the time of Appellant’s invention to combine or modify the various references in the manner proposed by the Examiner.

For at least these reasons, Appellant submits that the rejections of Claims 9, 21, and 35 are improper and should be reversed by the Board.

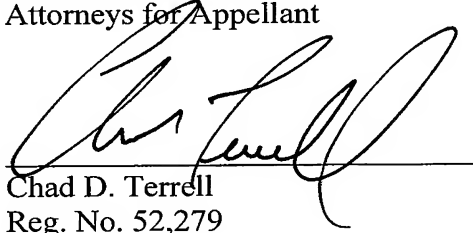
**Conclusion**

Appellant has demonstrated that, for at least the foregoing reasons, the present invention, as claimed, is clearly patentable over the references cited by the Examiner. Therefore, Appellant respectfully requests the Board to reverse the final rejection of the Examiner and instruct the Examiner to issue a Notice of Allowance of all pending claims.

The Commissioner is hereby authorized to charge the large entity fee of \$540.00 under 37 C.F.R. §§1.191(a) and 1.17(b) for filing this Appeal Brief to Deposit Account No. 02-0384 of BAKER BOTTS L.L.P. Although no other fees are believed to be due at this time, the Commissioner is hereby authorized to charge any necessary additional fees and/or credit any overpayments to Deposit Account No. 02-0384 of BAKER BOTTS L.L.P.

Respectfully submitted,

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**Date:** October 6, 2008

**Customer Number:** 05073



**Appendix A: The Claims**

1. (Rejected) A system for enhanced extension mobility, the system comprising one or more processing units collectively operable to:

access user input indicating either:

a desire of a user to logon at an endpoint in a private mode according to which the endpoint supports only an extension of the user, wherein the user can be concurrently logged on at multiple endpoints; or

a desire of the user to logon at the endpoint in a shared mode according to which the endpoint concurrently supports an extension of the user and one or more other extensions of one or more other users;

if the user input indicates a desire of the user to logon at the endpoint in a private mode according to which the endpoint supports only an extension of the user, configure the endpoint to support only an extension of the user; and

if the user input indicates a desire of the user to logon at the endpoint in a shared mode according to which the endpoint concurrently supports an extension of the user and one or more other extensions of one or more other users, configure the endpoint to concurrently support an extension of the user and one or more other extensions of one or more other users.

2. (Rejected) The system of Claim 1, wherein one or more of the processing units are located at the endpoint.

3. (Rejected) The system of Claim 1, wherein one or more of the processing units are located at a server remote from the endpoint.

4. (Rejected) The system of Claim 1, wherein the one or more processing units are operable to:

prompt the user to select between private mode and shared mode at the endpoint; and

receive a selection by the user of either private mode or shared mode at the endpoint, the selection providing the user input.

5. (Rejected) The system of Claim 1, wherein the one or more processing units are operable to:

- prompt the user to enter an extension of the user to logon at the endpoint;
- access an extension entered by the user; and
- configure the endpoint to support the entered extension.

6. (Rejected) The system of Claim 5, wherein the one or more processing units are operable to:

- prompt the user to enter a password to logon at the endpoint;
- access a password entered by the user;
- determine whether the entered password is valid; and
- if the entered password is valid, configure the endpoint to support the entered extension.

7. (Rejected) The system of Claim 1, wherein the one or more processing units are further operable, in response to an incoming phone call received at the endpoint, to indicate a called extension of the incoming phone call if the endpoint is concurrently supporting multiple extensions of multiple users.

8. (Rejected) The system of Claim 7, wherein the one or more processing units are operable to display the called extension of the incoming phone call at a display screen of the endpoint to indicate the called extension.

9. (Rejected) The system of Claim 7, wherein the one or more processing units are operable to audibly announce a name of a called user of the incoming phone call to indicate the called extension.

10. (Rejected) The system of Claim 7, wherein the one or more processing units are operable to play a ring tone corresponding to the called extension to indicate the called extension.

11. (Rejected) The system of Claim 1, wherein the one or more processing units are further operable, if the endpoint is concurrently supporting multiple extensions, to:

prompt a user to enter a calling extension of an outgoing phone call from the endpoint; and

generate signaling data for communication with the outgoing phone call that identifies the entered calling extension.

12. (Rejected) The system of Claim 1, wherein the one or more processing units are further operable, if the endpoint is concurrently supporting multiple extensions, to generate signaling data for communication with every outgoing phone call from the endpoint according to a predetermined extension.

13. (Rejected) The system of Claim 1, wherein the one or more processing units are further operable, if the user input indicates a desire of the user to logon at the endpoint in a private mode according to which the endpoint supports only an extension of the user, to configure the endpoint according to one or more preferences of the user.

14. (Rejected) The system of Claim 1, wherein the one or more processing units are further operable, in response to an outgoing phone call from the endpoint, to cause one or more of one or more call detail records (CDRs) and one or more billing records to be updated to indicate a calling extension of the outgoing phone call from the endpoint.

15. (Rejected) A method for enhanced extension mobility, the method comprising:

accessing user input indicating either:

a desire of a user to logon at an endpoint in a private mode according to which the endpoint supports only an extension of the user, wherein the user can be concurrently logged on at multiple endpoints; or

a desire of the user to logon at the endpoint in a shared mode according to which the endpoint concurrently supports an extension of the user and one or more other extensions of one or more other users;

if the user input indicates a desire of the user to logon at the endpoint in a private mode according to which the endpoint supports only an extension of the user, configuring the endpoint to support only an extension of the user; and

if the user input indicates a desire of the user to logon at the endpoint in a shared mode according to which the endpoint concurrently supports an extension of the user and one or more other extensions of one or more other users, configuring the endpoint to concurrently support an extension of the user and one or more other extensions of one or more other users.

16. (Rejected) The method of Claim 15, comprising:

prompting the user to select between private mode and shared mode at the endpoint;  
and

receiving a selection by the user of either private mode or shared mode at the endpoint, the selection providing the user input.

17. (Rejected) The method of Claim 15, comprising:

prompting the user to enter an extension of the user to logon at the endpoint;

accessing an extension entered by the user; and

configuring the endpoint to support the entered extension.

18. (Rejected) The method of Claim 17, comprising:  
prompting the user to enter a password to logon at the endpoint;  
accessing a password entered by the user;  
determining whether the entered password is valid; and  
configuring the endpoint to support the entered extension only if the entered password is valid.

19. (Rejected) The method of Claim 15, further comprising, in response to an incoming phone call received at the endpoint, indicating a called extension of the incoming phone call if the endpoint is concurrently supporting multiple extensions of multiple users.

20. (Rejected) The method of Claim 19, comprising displaying the called extension of the incoming phone call at a display screen of the endpoint to indicate the called extension.

21. (Rejected) The method of Claim 19, comprising audibly announcing a name of a called user of the incoming phone call to indicate the called extension.

22. (Rejected) The method of Claim 19, comprising playing a ring tone corresponding to the called extension to indicate the called extension.

23. (Rejected) The method of Claim 15, comprising, if the endpoint is concurrently supporting multiple extensions:

prompting a user to enter a calling extension of an outgoing phone call from the endpoint; and

generating signaling data for communication with the outgoing phone call that identifies the entered calling extension.

24. (Rejected) The method of Claim 15, comprising, if the endpoint is concurrently supporting multiple extensions, generating signaling data for communication with every outgoing phone call from the endpoint according to a predetermined extension.

25. (Rejected) The method of Claim 15, comprising, if the user input indicates a desire of the user to logon at the endpoint in a private mode according to which the endpoint supports only an extension of the user, configuring the endpoint according to one or more preferences of the user.

26. (Rejected) The method of Claim 15, further comprising, in response to an outgoing phone call from the endpoint, causing one or more of one or more call detail records (CDRs) and one or more billing records to be updated to indicate a calling extension of the outgoing phone call from the endpoint.

27. (Rejected) Logic for enhanced extension mobility, the logic encoded in media and when executed operable to:

access user input indicating either:

a desire of a user to logon at an endpoint in a private mode according to which the endpoint supports only an extension of the user, wherein the user can be concurrently logged on at multiple endpoints; or

a desire of the user to logon at the endpoint in a shared mode according to which the endpoint concurrently supports an extension of the user and one or more other extensions of one or more other users;

if the user input indicates a desire of the user to logon at the endpoint in a private mode according to which the endpoint supports only an extension of the user, configure the endpoint to support only an extension of the user; and

if the user input indicates a desire of the user to logon at the endpoint in a shared mode according to which the endpoint concurrently supports an extension of the user and one or more other extensions of one or more other users, configure the endpoint to concurrently support an extension of the user and one or more other extensions of one or more other users.

28. (Rejected) The logic of Claim 27, being at least partly located at the endpoint.

29. (Rejected) The logic of Claim 27, being at least partly located at a server remote from the endpoint.

30. (Rejected) The logic of Claim 27, operable to prompt the user to select between private mode and shared mode at the endpoint, the selection by the user providing the user input.

31. (Rejected) The logic of Claim 27, operable to:  
prompt the user to enter an extension of the user to logon at the endpoint;  
access an extension entered by the user; and  
configure the endpoint to support the entered extension.

32. (Rejected) The logic of Claim 31, operable to:  
prompt the user to enter a password to logon at the endpoint;  
access a password entered by the user;  
determine whether the entered password is valid; and  
if the entered password is valid, configure the endpoint to support the entered extension.

33. (Rejected) The logic of Claim 27, further operable, in response to an incoming phone call received at the endpoint, to indicate a called extension of the incoming phone call if the endpoint is concurrently supporting multiple extensions of multiple users.

34. (Rejected) The logic of Claim 33, operable to display the called extension of the incoming phone call at a display screen of the endpoint to indicate the called extension.

35. (Rejected) The logic of Claim 33, operable to audibly announce a name of a called user of the incoming phone call to indicate the called extension.

36. (Rejected) The logic of Claim 33, operable to play a ring tone corresponding to the called extension to indicate the called extension.

37. (Rejected) The logic of Claim 27, further operable, if the endpoint is concurrently supporting multiple extensions, to:

prompt a user to enter a calling extension of an outgoing phone call from the endpoint; and

generate signaling data for communication with the outgoing phone call that identifies the entered calling extension.

38. (Rejected) The logic of Claim 27, further operable, if the endpoint is concurrently supporting multiple extensions, to generate signaling data for communication with every outgoing phone call from the endpoint according to a predetermined extension.

39. (Rejected) The logic of Claim 27, further operable, if the user input indicates a desire of the user to logon at the endpoint in a private mode according to which the endpoint supports only an extension of the user, to configure the endpoint according to one or more preferences of the user.

40. (Rejected) The logic of Claim 27, further operable, in response to an outgoing phone call from the endpoint, to cause one or more of one or more call detail records (CDRs) and one or more billing records to be updated to indicate a calling extension of the outgoing phone call from the endpoint.



41. (Rejected) A system for enhanced extension mobility, the system comprising:  
means for accessing user input indicating either:

a desire of a user to logon at an endpoint in a private mode according to which the endpoint supports only an extension of the user, wherein the user can be concurrently logged on at multiple endpoints; or

a desire of the user to logon at the endpoint in a shared mode according to which the endpoint concurrently supports an extension of the user and one or more other extensions of one or more other users;

means for, if the user input indicates a desire of the user to logon at the endpoint in a private mode according to which the endpoint supports only an extension of the user, configuring the endpoint to support only an extension of the user; and

means for, if the user input indicates a desire of the user to logon at the endpoint in a shared mode according to which the endpoint concurrently supports an extension of the user and one or more other extensions of one or more other users, configuring the endpoint to concurrently support an extension of the user and one or more other extensions of one or more other users.

42. (Rejected) A system for enhanced extension mobility, the system comprising one or more processing units located at an endpoint and collectively operable to:

access user input indicating either:

a desire of a user to logon at the endpoint in a private mode according to which the endpoint supports only an extension of the user, wherein the user can be concurrently logged on at multiple endpoints; or

a desire of the user to logon at the endpoint in a shared mode according to which the endpoint concurrently supports an extension of the user and one or more other extensions of one or more other users;

if the user input indicates a desire of the user to logon at the endpoint in a private mode according to which the endpoint supports only an extension of the user, configure the endpoint to support only an extension of the user and configure the endpoint according to one or more preferences of the user;

if the user input indicates a desire of the user to logon at the endpoint in a shared mode according to which the endpoint concurrently supports an extension of the user and one or more other extensions of one or more other users, configure the endpoint to concurrently support an extension of the user and one or more other extensions of one or more other users;

in response to an incoming phone call received at the endpoint, indicate a called extension of the incoming phone call if the endpoint is concurrently supporting multiple extensions of multiple users;

if the endpoint is concurrently supporting multiple extensions:

prompt a user to enter a calling extension of an outgoing phone call from the endpoint; and

generate signaling data for communication with the outgoing phone call that identifies the entered calling extension.

ATTORNEY DOCKET NO.  
062891.1251

PATENT APPLICATION  
USSN 10/824,180

**Appendix B: *Huang***

(12) **United States Patent**  
Huang et al.

(10) **Patent No.:** US 6,577,726 B1  
(45) **Date of Patent:** Jun. 10, 2003

(54) **COMPUTER TELEPHONY INTEGRATION  
HOTELLING METHOD AND SYSTEM**

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(\*) **Notice:** Subject to any disclaimer, the term of this  
patent is extended or adjusted under 35  
U.S.C. 154(b) by 0 days.

(21) **Appl. No.:** 09/541,379

(22) **Filed:** Mar. 31, 2000

(51) **Int. Cl.<sup>7</sup>** ..... H04M 3/00; H04M 5/00

(52) **U.S. Cl.** ..... 379/265.02; 379/265.04

(58) **Field of Search** ..... 379/265.01-265.14,  
379/266.01-266.1, 309, 219, 220.01, 207.01-207.04,  
207.11, 207.12, 207.13, 211.02, 142.01-142.18;  
370/270

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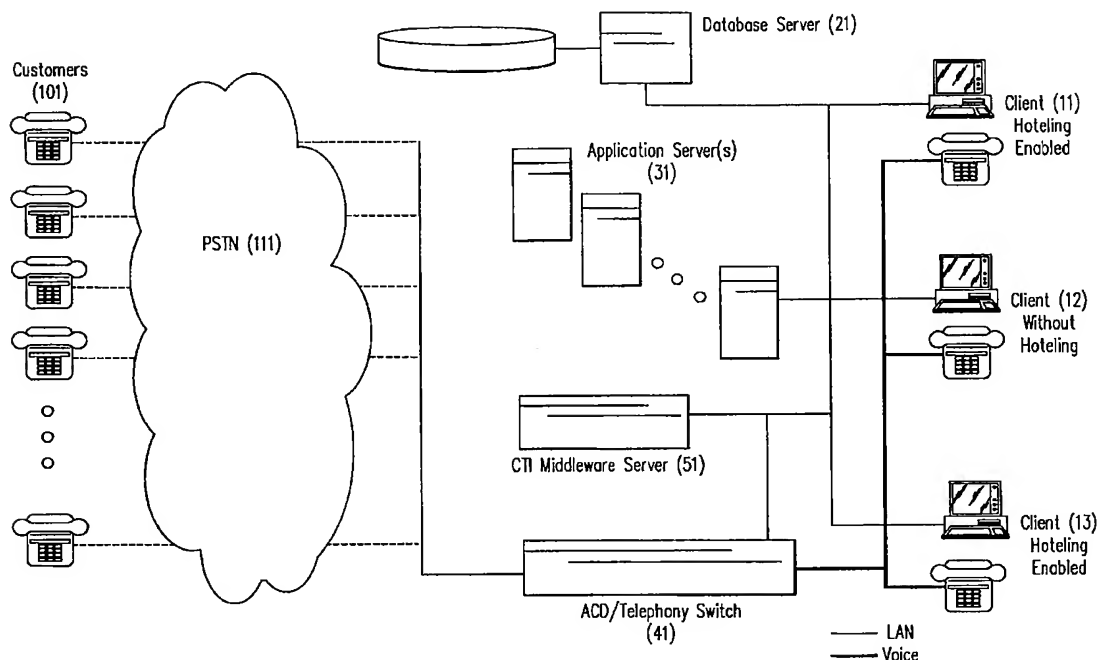
*Primary Examiner*—Benny Q. Tieu

(74) *Attorney, Agent, or Firm*—James W. Soong; Campbell  
Stephenson Ascolese, LLP

(57) **ABSTRACT**

A method and system for enabling a CTI user to log in at any  
work station in a network and utilize the system with the  
correct teleset, and also to transfer a CTI transaction or  
interaction to another CTI user.

9 Claims, 1 Drawing Sheet



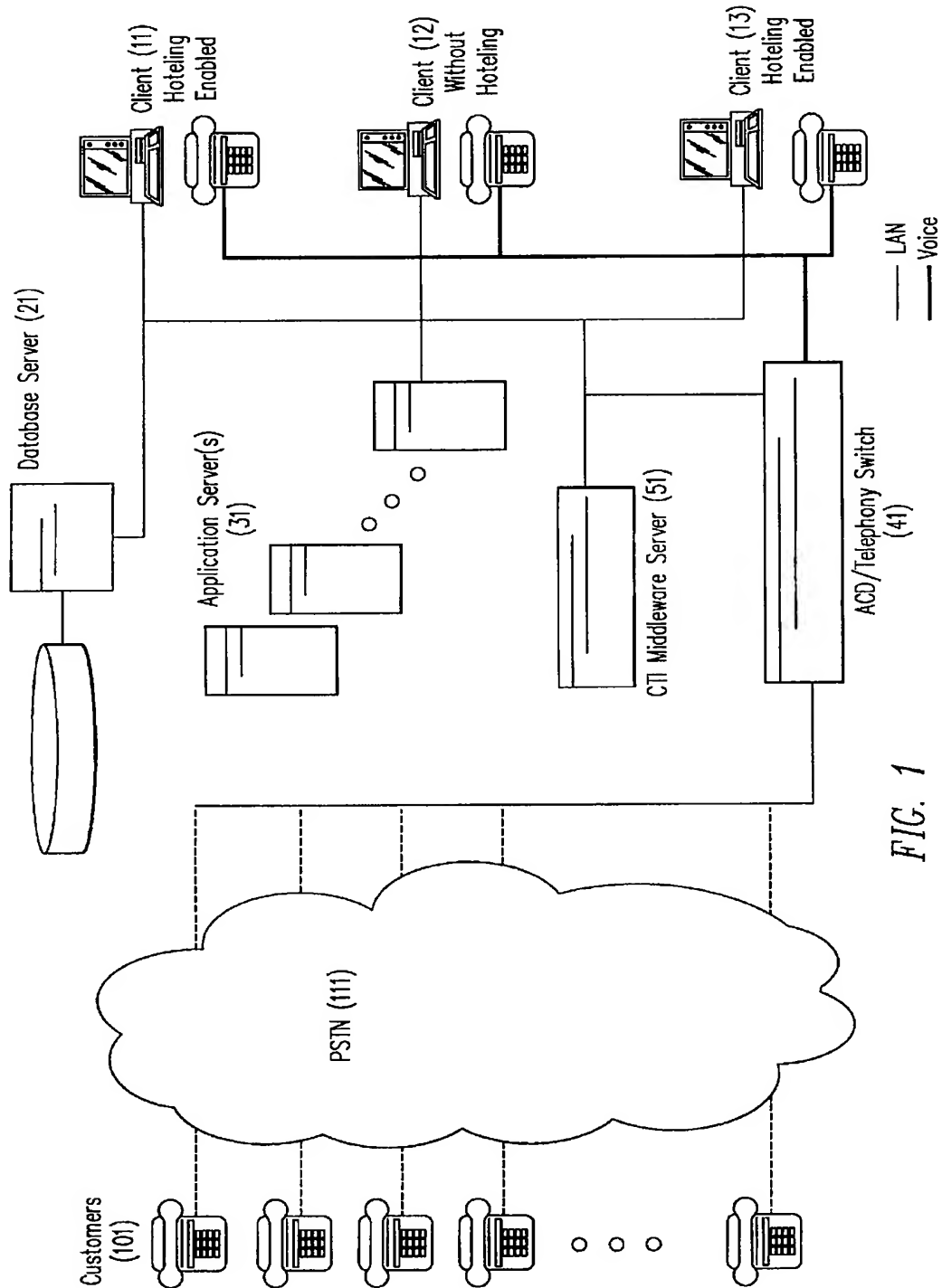


FIG. 1

1

# COMPUTER TELEPHONY INTEGRATION HOTELLING METHOD AND SYSTEM

## FIELD OF THE INVENTION

The invention relates to network routing in a Computer-Telephony Integration (CTI) system where users, for example, users at multiple locations, are enabled to share and transfer a CTI session.

## BACKGROUND

Companies are deploying mobile employees and multiple shifts of employees. Mobile employees usually have laptops and/or handheld devices as their workstations and may also have a dedicated desk at the office. However, there are occasions where these employees will be at another company location and will plug into the network, using an available teleset. Employees are given the freedom to move about within the facilities and chose a desk to work from. At each desk are a network connection and a teleset. Some desks may have workstations for use. Other companies are deploying multiple shifts of employee that use the same physical workstations and telesets as the other shifts. These employees are usually assigned a workspace for their shift or they may select any open workspace.

To enable these different types of deployments, a clear need exists for a CTI (computer telephony integration) system that can support non-secure CTI enabled telesets for all of the call center agents independently of physical location and that can also support CTI users to share enabled telesets and to transparently pass a caller or issue from one to another agent.

## SUMMARY

The invention described herein relates to a system and method for CTI implemented "hotelling." Hotelling is the functionality of sharing CTI enabled telesets among multiple users. Users may be assigned to the telesets, or they may be sharing the same teleset, or the teleset may not be assigned to a particular person. Specifically, the invention provides a method and system where each agent or user has a unique login ID and password to access the CTI features from any known CTI enabled teleset. This enables a CTI user or agent to log in at any workstation in a network and utilize the system with the CTI enabled teleset, and also to transfer a CTI transaction or interaction to another CTI user or agent.

The method and system of the invention utilizes a computer telephony integration (CTI) system with a plurality of CTI-enabled telesets, each connected to an ACD or telephony switch which is connected to a CTI middleware server, and a plurality of workstations connected to the server. The system is configured so that each workstation and each teleset is identified to the server by a unique ID. This allows a user to log into the system with a user ID from any workstation and thereafter utilize computer telephony integration with a CTI enabled teleset. Additionally, a user can transfer a call, including the workstation screen information associated with the call, to another user at another workstation.

The CTI hotelling functionality also enables an agent to use any host (using their unique agent id) to login to the configuration. It also enables an administrator to use an administration tool to enable hotelling for a specific machine. If the machine is enabled for hotelling, the program will use the "hostname" to get the CTI configuration.

2

If the machine is not enabled for hotelling, the program will use the agent default teleset to get the CTI configuration.

## FIGURE

The invention is shown and illustrated by the FIGURE appended hereto.

FIG. 1 shows a hotelling enabled server with two hotelling enabled clients, one non-enabled client, a database server, application servers, a CTI middleware server, an ACD/telephony switch, and customers connected through the public switched telephone network.

## OVERVIEW

Hotelling is a powerful CTI tool that permits sharing of physical resources by multiple users. Users can log into the server from any enabled workstation and utilize the CTI system with the correct teleset. The teleset ID is determined by the machine name. Moreover, hotelling allows transferring calls to the right teleset by checking runtime information.

The capability that the method and system of the invention provides to a mobile user is illustrated by multiple examples. In one scenario, a call center agents works at a single call center, using a different computer, workspace and teleset each day. In a second scenario, a travelling consultant is moving to different locations, using different computers in each location. In still a third scenario, the Consultant is using the same computer (e.g. a laptop computer) and logging in from different locations on different days or times of day.

In all three scenarios, the employee has a teleset and extension assigned for inbound calls at his permanent office workspace. While at his desk the employee touches base with his contacts for one of the many projects that he is involved with.

Consultant achieves this by either (1) plugging his laptop into the corporate network, or (2) using the workstation and CTI teleset at the hotelling location, and logging on to his company's CTI enabled Server. He navigates to the "My Contacts" view of the "Contacts" screen. From this view, he drills down on the hyperlink of the Name of the project in which he is interested. This will bring the employee to the Contacts view and he right mouse-clicks on the person he would like to contact. The floating right mouse window is presented and employee selects Make Call from the window. The CTI method and system of the invention initiates the call to the contact for the employee. The employee picks up his telephone handset or talks in his hands-free headset when the phone is answered by his contact. During his conversation, employee has navigated to areas of interest within the hotelling enabled application, and especially a CTI customer relationship management application. The conversation reaches a point where employee needs to conference in another employee, so he selects the Conference Transfer button on the CTI Toolbar and is presented with a Begin Conference pop-up box. Employee types in the name of the person he wants to conference, performs the search and selects the Call button to initiate the conference call. The CTI method and system initiates the conference call by placing the current call on hold, dialing the number, and forwards Employee existing view to the fellow consultant to be conferenced. The view is forwarded so that the person joining the conference has the appropriate information to participate in the call. When the person joining the call accepts the call from the CTI Toolbar, the voice connection between the parties is established, and the view from Employee is presented to the recipient.

After making a round of calls from his desk with his CTI enabled application, Employee heads to another location for a meeting and to continue making his calls. He arrives at the other location and finds an empty workspace with a connection to the corporate network and a phone that has been CTI enabled for the method and system of the invention. Again Employee plugs his laptop into the corporate network or uses a workstation already installed, and logs on to his hotelling enabled application and the company's CTI Server and continues, as if he was at his permanent desk, to make calls to his contacts with CTI. In these two scenarios, Employee goes to a different location and (1) uses the same computer, but logs in from a different location, and (2) uses a different computer.

While Employee is in the office, he is able to accept inbound calls from his workspace with the CTI toolbar, menu items, or shortcuts. This is true whether he is at his permanent desk or at a desk with a CTI enabled teleset in another office.

The method and system of the invention is also useful to roaming CTI users. Consider a Corporation, that has sales offices throughout the world. Many of their sales staff visit their sales offices as needed. Therefore they do not have assigned workspaces at their sales offices. Each workspace in the sales office is equipped with a PC workstation and a CTI enabled teleset. The sales team members do not have dedicated telesets and extensions for inbound calls but are dependent on the workspace they are using at a specific time. The sales team members are assigned an extension. Calls to sales team members are usually directed to their voicemail boxes, unless they are in the office and logged into the server, in which case, calls are directed to the appropriate CTI enabled teleset.

When members of the sales team visit their sales office, they would select a vacant workspace. The sales team members are not tied to a specific workspace and are free to select and use any available workspace in the office.

Consider a sales team member who comes into the office to make follow up calls to contacts associated with his accounts. He logs on, with his own unique ID and password, to the company's CTI enabled server, navigates to the Accounts, screen and clicks on the hyperlink of the account of interest. He then selects contacts from the Account Contact view that he wants to follow up with. Once the individual is selected, he clicks the right mouse button on the contact and selects the Make Call option from the pop up menu. The CTI Server dials the contact and the sales team member picks up the telephone handset when the phone is ringing.

While the sales team member is in the office, he is able to accept inbound calls from his workspace with the CTI toolbar, menu items, and/or shortcuts.

Shared telesets and workstations among CTI users is another aspect of the invention. Consider a Corporation that provides a 24/7 customer contact center to service their customers. The days are partitioned into three eight-hour shifts of three hundred agents per shift. At each of the three hundred workspaces is a PC workstation and a CTI enabled teleset. For each shift, agents are assigned to specific workspaces. Thus, three different agents throughout a 24-hour period share each workspace. These three agents also share the same permanent telesets for inbound non-ACD calls.

Agents log in to the server with their own unique ID and password at their assigned workspace. The agents automatically log into their ACD queues at start up and perform telephony controls from the CTI toolbar, the CTI Menu, and the right mouse menus. Current views are also transferred when calls are transferred to another CTI user.

While the agents are at their workspace, they may accept inbound calls on their non-ACD line with the CTI toolbar, menu items, and shortcuts.

It is seen that the method and system of the invention provide the user with a high degree of CTI connectivity and a high degree of CTI flexibility.

The following defined terms are used in this document.  
**Automated Call Distributor (ACD)**—An Automated Call Distributor may be a component of a telephony switch or it may be an external server. ACDs are features that route an inbound call from the telephony switch's point of view. Agents, groups/queues and routing steps are defined within the ACD for call routing purposes. This is usually confined to one telephony switch. Whereas, CTI can enable the routing of calls and data to multiple switches.  
**Call Center Agents**—Users of the system who receive and make calls, and track responses/opportunities pertaining to campaigns

**Computer Telephony Integration (CTI)**—Integration of telephony networks and data networks to allow integrated and seamless telephony control from a desktop application

**Hotelling**—The functionality of sharing CTI enabled telesets among multiple users. Users may be assigned to the telesets, or they may be sharing the same teleset, or the teleset may not be assigned to a particular person.

**Teleset**—An augmented telephone with CTI buttons and features, connected to and integrated with a CTI enabled server through an ACD (or switch) for use in call centers.

The interconnections and architecture of these various elements is illustrated in FIG. 1. FIG. 1 shows a hotelling enabled client-server system with a database server, 21, serving three clients, 11, 12, and 13. Each client has a teleset and a workstation. Two of the clients, 11, and 13, are hotelling enabled, and one client, 12, is not hotelling enabled. The client workstations are connected to the database server, 21, the application servers, 31, and the CTI middleware server, 51, through a LAN. The telesets are connected to the CTI middleware server, 51, through an ACD/Telephony Switch, 41, to the CTI middleware server, 51. The customers, 101, are connected to the system through a Public Switched Telephone Network (PSTN), 111, and the ACD/Telephony Switch, 41.

#### DETAILED DESCRIPTION

Hotelling is a powerful CTI tool that permits sharing of physical resources by multiple users. Users can log into the server from any enabled workstation and utilize the CTI system with the correct teleset. The teleset ID is determined by the machine name. Moreover, hotelling allows transferring calls to the right teleset by checking runtime information. The CTI method and system of the invention provides computer telephony integration to support a broad variety of Automated Call Distributors (ACD) and telephony switches to allow rapid deployments of call center technology.

FIG. 1 shows a hotelling enabled CTI system with a hotelling enabled CTI server 21, three CTI terminals, 11, 12, 13, and CTI and hotelling enabled telesets.

#### Hotelling

The CTI method and system of the invention supports hotelling and multi-shift call center deployments by providing the ability for employees to share workspaces while providing universal access to the server application with the associated teleset enabled via CTI. As a result, call centers can successfully implement 24x7 inbound and outbound call center operations while leveraging shared hardware technology and resources. In addition, the CTI method and system of the invention allows call centers to implement flexible staffing strategies by allowing agents to rotate workspaces based on work schedules and workspace availability.

CTI hotelling features include support for multiple users to share the same CTI enabled teleset, support for any agent

to use a single login to access Siebel CTI from any hotel-enabled teleset, and reduced CTI administration by not requiring association of every employee for hotelling-enabled telesets

If a workstation is hotelling enabled, the application will use the hostname to find the teleset, and the configuration.

In the prior CTI architectures, there is no link between teleset and hostname. However, in the method and system of the present invention a HOST field is created in the All Teleset applet or database fields, to create the link between the teleset and the hostname.

When the CTI enabled application starts up, it checks that the agent is a valid CTI agent, that is, a valid entry in the appropriate field of the All Teleset applet or database. If there is not a valid CTI agent in this field, CTI will normally be disabled. If there is the valid agent, the application will use the local hostname to find the teleset from a system configuration table, such as a S\_C\_TELESET table. However, when data is found, hotelling is enabled for this workstation, and the application will use this teleset data to find the configuration.

Since the hotelling feature creates runtime data, a user does not have a static link with any specific teleset. Therefore the CTI method and system of the invention creates the mapping between hostname and agent for providing dynamic information. The system stores the hostname to a database table, as the S\_CTI\_USER table in Siebel. When the application starts up successfully, it stores the hostname to S\_CTI\_USER table by username. When the application is shutting down, it removes the hostname from the database.

When an administrator enables the hotelling feature for a machine, the administrator specifies the hostname for a teleset in the All Telesets applet in the All Telesets view. The Administrator can also use Agents View to monitor/modify the agent-host runtime relationship.

#### Algorithms and procedures

The following pseudo code describes procedures on the driver manager. Startup. During startup the system checks for a valid user while marking a hotelling flag "false." If no valid user is found, the system updates the hostname field for tracking and hostname. If a valid user is found, the hotelling flag is set to "true" and hotelling is enabled. The following pseudo code is illustrative:

Check that employee is a valid CTI user.

Mark the hotelling flag to be false.

Use hostname to check the S\_CTI\_TELESET table to find valid hotelling teleset.

If found, this machine supports hotelling and is open to every agent. Set hotelling flag to "true". Update the hostname field in S\_CTI\_USER for tracking agent/hostname.

If not found, update the hostname field in S\_CTI\_USER. Use the default teleset for the valid CTI user.

#### Shutdown:

Remove hostname from S\_CTI\_USER table.

When calling or transferring to an employee using a hotelling enabled teleset, the system searches for the hostname in the S\_CTI\_USER table, database, or applet, by user name. If an entry is not found, the work phone number is used. If found, this extension is used with the hostname in the application.

Find the hostname from S\_CTI\_USER table by user name.

If not found, use work phone in Employee.

If found, get the extension by hostname.

While the invention has been described with respect to certain preferred embodiments and exemplifies, it is not

intended to limit the scope of the invention thereby, but solely by the claims appended hereto.

We claim:

1. A method of using a computer telephony integration system comprising a plurality of CTI-enabled telesets connected to an ACD or telephony switch, the ACD or telephony switch being connected to a CTI middleware server; and a plurality of workstations connected to the server, said method comprising identifying a teleset to the server as a hotelling enabled teleset by transmitting a unique ID to the server wherein said identifying comprises:

receiving a hostname;

determining whether said hostname is included in a set of system configuration associations;

recognizing a teleset associated with said hostname as being a hotelling enabled teleset if said hostname is determined to be included in said set of system configuration associations; and

recognizing a teleset associated with said hostname as not being a hotelling enabled teleset if said host name is determined to not be included in said set of system configuration associations.

2. The method of claim 1 comprising logging into the system with a user ID from any workstation and thereafter utilize computer telephony integration with a hotelling enabled teleset.

3. The method of claim 1 comprising transferring a call including the workstation screen information associated with the call to another user at another workstation.

4. The method of claim 3 where the other workstation is hotelling enabled.

5. The method of claim 3 where the other workstation is not hotelling enabled.

6. A computer telephony method of transferring from a first agent at a first location to a second agent at a second location, comprising:

identifying, based on a username of the second agent, a hostname associated with the second location;

determining, based on said hostname, whether the second location is hotelling enabled; and

if the second location is determined to be hotelling enabled, then transferring call data to a workstation at the second location wherein said determining comprises determining whether said hostname is referenced in a set of system configuration associations.

7. The computer telephony method of claim 6, wherein said set of system configuration associations is a system configuration table.

8. A computer telephony system for transferring from a first agent at a first location to a second agent at a second location, comprising:

means for identifying, based on a username of the second agent, a hostname associated with the second location;

means for determining, based on said hostname, whether the second location is hotelling enabled; and

means for transferring call data to a workstation at the second location if the second location is determined to be hotelling enabled wherein said means for determining comprises means for determining whether said hostname is referenced in a set of system configuration associations.

9. The computer telephony system of claim 8, wherein said set of system configuration associations is a system configuration table.

\* \* \* \* \*



ATTORNEY DOCKET NO.  
062891.1251

PATENT APPLICATION  
USSN 10/824,180

**Appendix C: Zhao**



US006035404A

**United States Patent** [19]  
**Zhao**

[11] **Patent Number:** **6,035,404**  
[45] **Date of Patent:** **Mar. 7, 2000**

[54] **CONCURRENT USER ACCESS CONTROL IN  
STATELESS NETWORK COMPUTING  
SERVICE SYSTEM**

11-66081 3/1999 Japan ..... G06F 17/30

[75] Inventor: **Yan Zhao, Fulton, Md.**

[73] Assignee: **International Business Machines  
Corporation, Armonk, N.Y.**

*Primary Examiner*—Robert W. Beausoliel, Jr.

*Assistant Examiner*—Christopher A. Revak

*Attorney, Agent, or Firm*—Karl O. Hesse

[57] **ABSTRACT**

[21] Appl. No.: **08/926,207**

[22] Filed: **Sep. 9, 1997**

[51] **Int. Cl.**<sup>7</sup> ..... **G06F 17/40**

[52] **U.S. Cl.** ..... **713/201; 709/225**

[58] **Field of Search** ..... 395/187.01, 186,  
395/200.55, 188.01; 713/200, 201, 202;  
709/225, 227, 228, 229, 224

[56] **References Cited**

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**8 Claims, 5 Drawing Sheets**

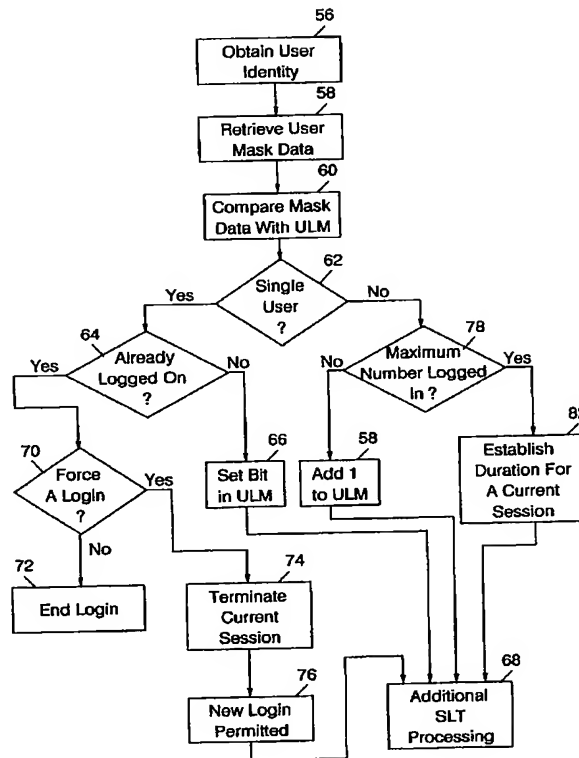


FIG. 1

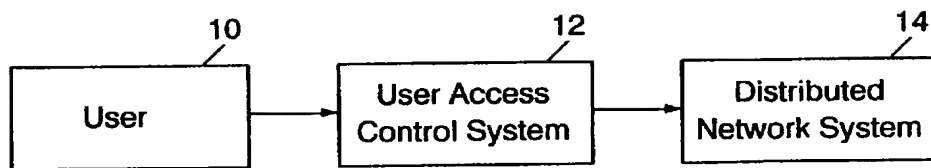


FIG. 2

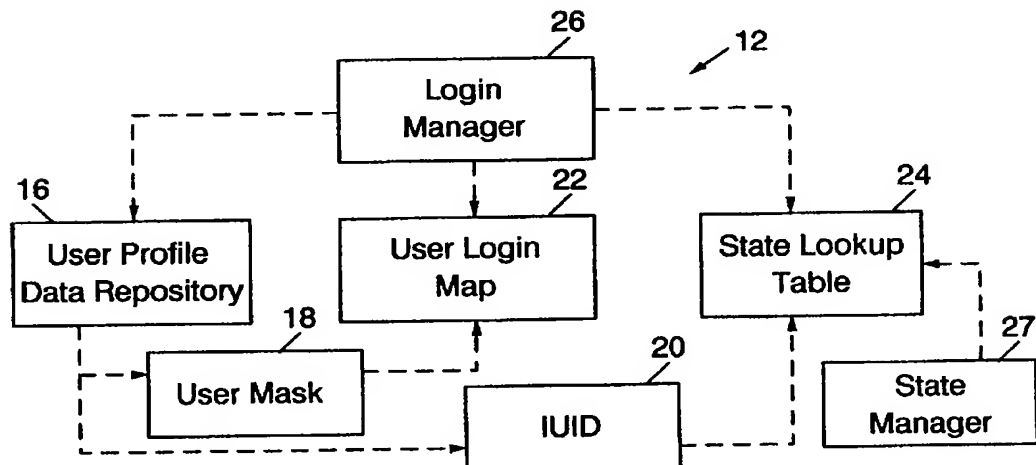


FIG. 3

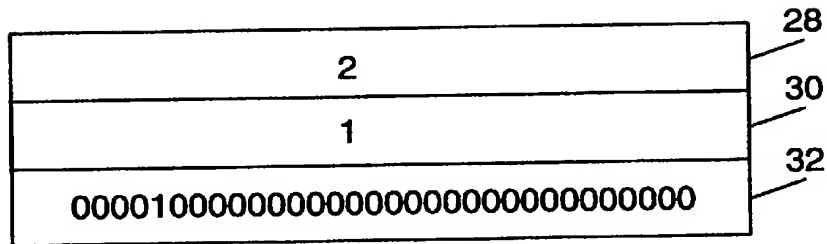


FIG. 4

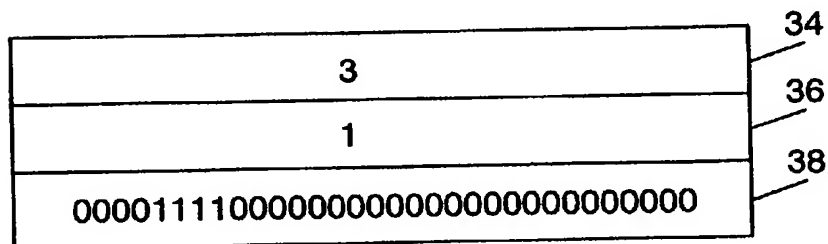


FIG. 5

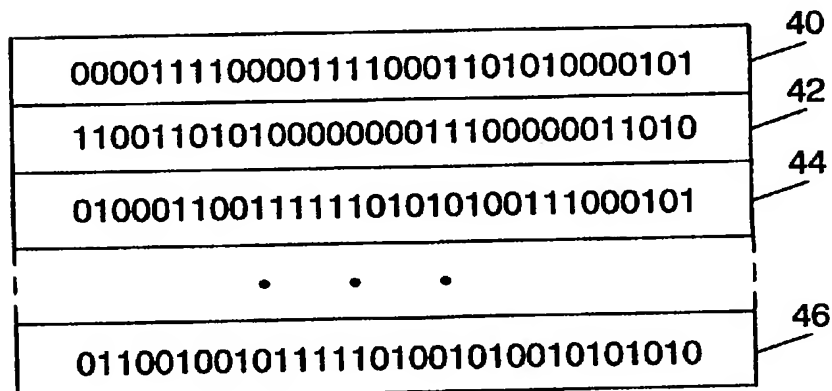
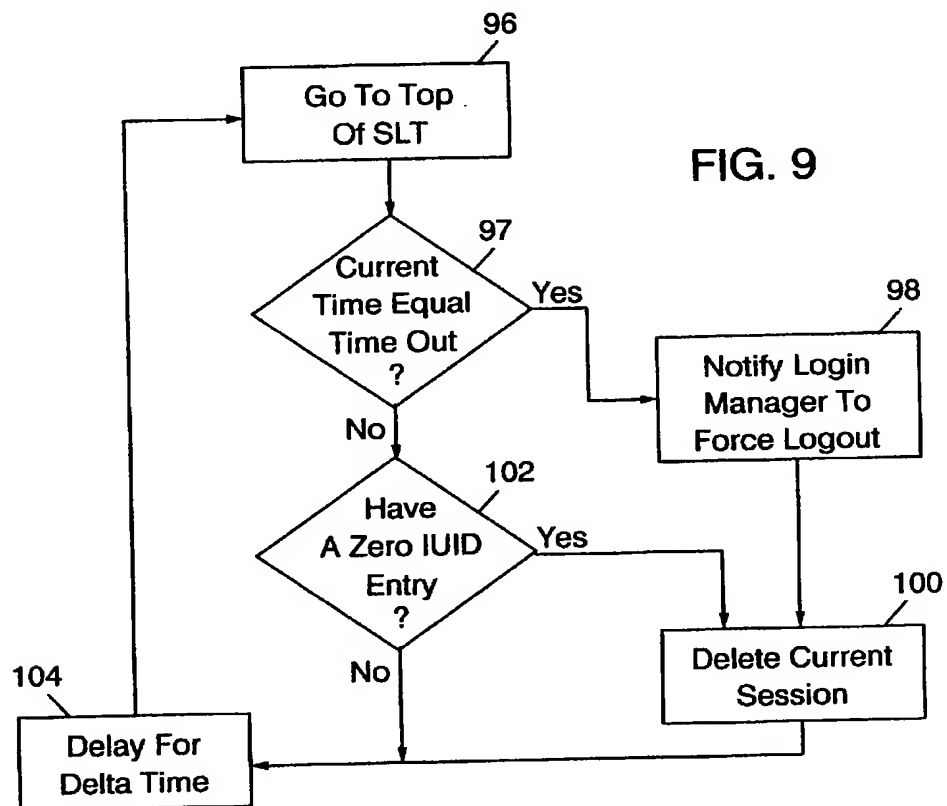


FIG. 6

Session ID 48	IUID 50	Start Time 52	Time Out 54
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0010000	10002	960826044030	
0100231	0	960826054050	
0100459	10034	960826064050	



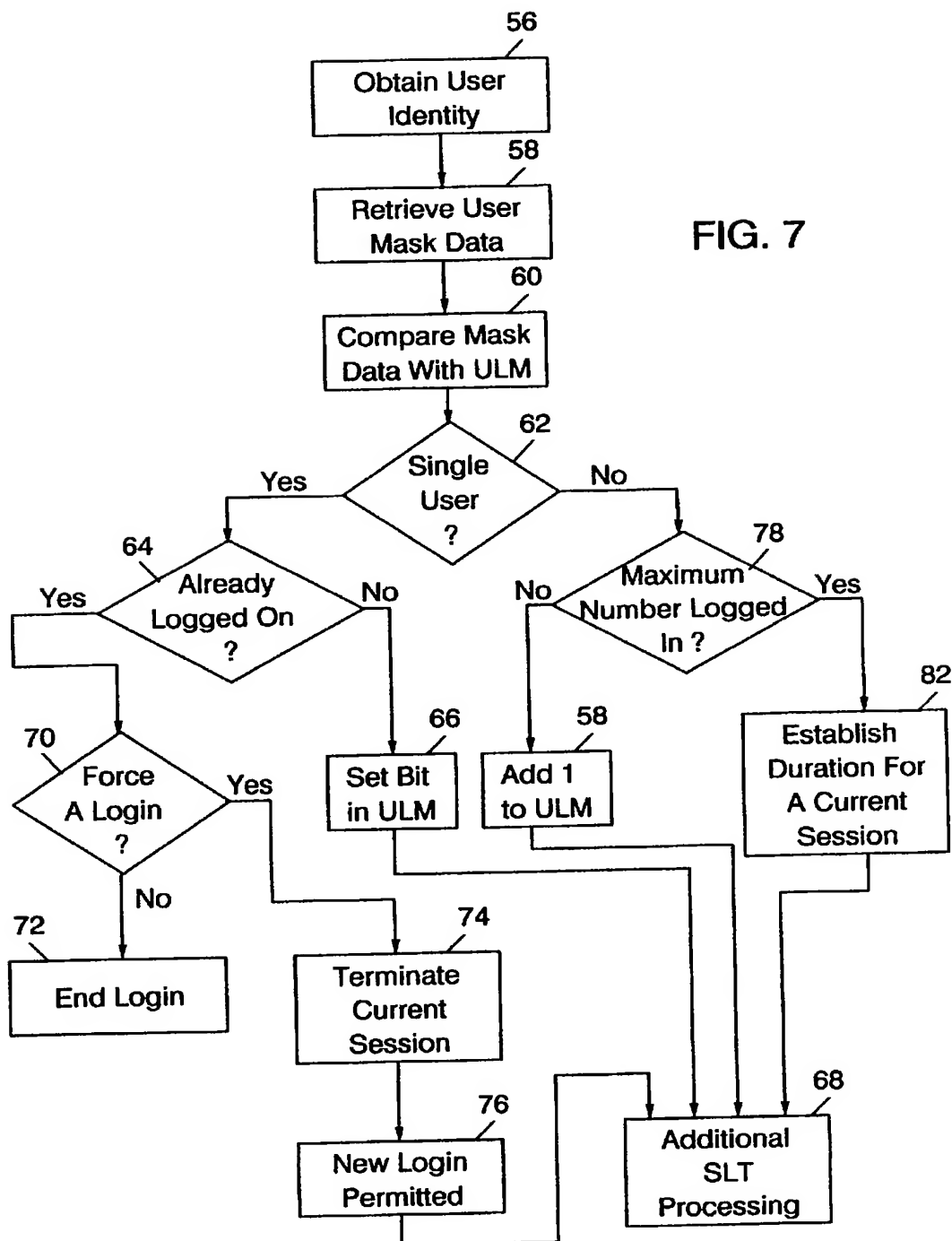


FIG. 8A

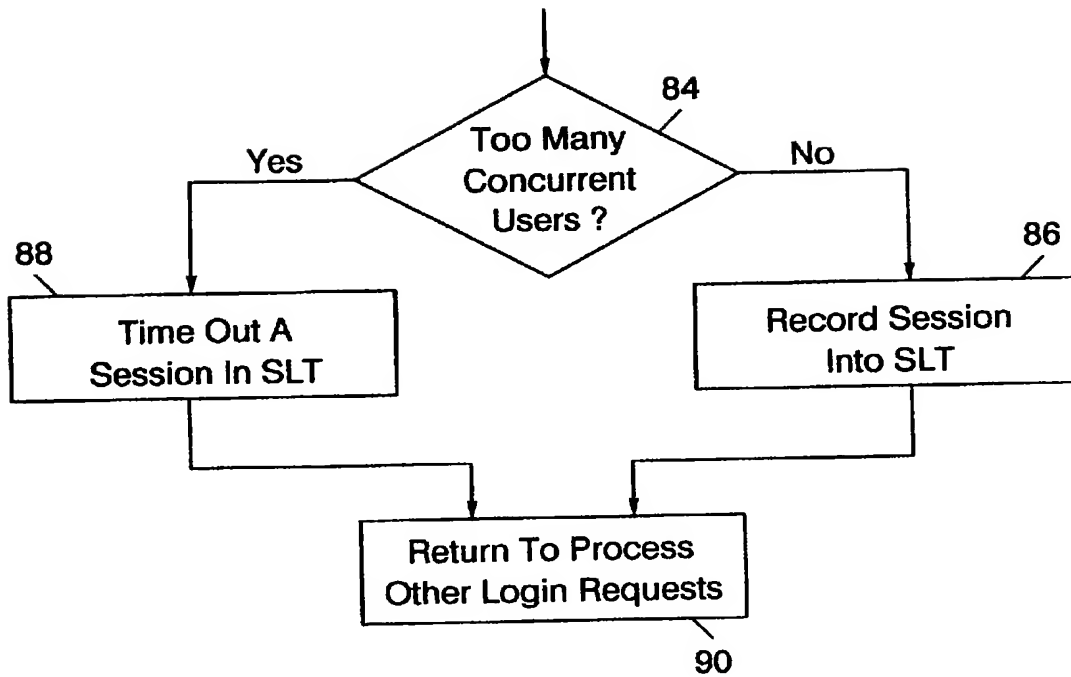
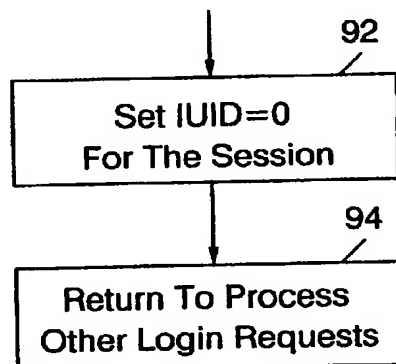


FIG. 8B



# CONCURRENT USER ACCESS CONTROL IN STATELESS NETWORK COMPUTING SERVICE SYSTEM

## BACKGROUND OF THE INVENTION

### 1. Field of the Invention

This invention relates, in general, to online computer systems and, more specifically, to access control of concurrent or multiple users using the same account or master ID number.

### 2. Description of the Prior Art

Online access to a computer or host system is becoming more commonplace with the passage of time, partly because of the availability of several publicly oriented computer access networks, and the Internet. This changing of the way people can get information has created a new field of commerce, i. e., electronic publishing. Whereas materials were traditionally published in hard copy format, there has become a need to make materials available on computer readable media, such as a CD-ROM. Now, much interest is being expressed for online publishing. For example, when a person wants to peruse a certain technical reference book, he might simply log onto the Internet and view the contents of the publication on the video monitor. In some cases, hard copy printouts may be made for appropriate text or graphic portions of the document or book from the online session.

One of the problems associated with this type of publication distribution is the ability to fairly and properly charge the user for using the information. A desirable method would be to charge the user for the ability to access this material, which is much like the charges made when the material is distributed in hard copy or CD-ROM format. This is not very difficult for a single user, i. e., one who has a separate account with the publisher. The user simply registers to use the information and agrees to pay the agreed compensation. With this type of arrangement, no limit is usually placed upon the access time, thus the user is free to peruse the materials as long as he wants. The difficulty comes in when the situation of a concurrent user, or one that gains access simultaneously under a common account, uses the system. Such may be the case at educational institutions and large companies. The institution or company may simply want to have a master account which would allow simultaneous access to the materials by a maximum number of online users, all authorized by the entity to view the publication. For example, a corporate account may allow anyone with proper access in the corporation to view online a particular publication, up to a maximum of twenty users concurrently, or simultaneously. That would be much like charging for selling to the corporation twenty copies of the book or document for unlimited use.

One of the difficulties in establishing this type of online publishing system is in properly permitting and controlling access to the system in a manner consistent with these objectives. This is especially true when dealing with a stateless network, like the Internet's World Wide Web (www), which does not maintain user states of logged in or logged out. In conventional host-based computer networking systems, logged in users and session states are maintained by the involved hosts. The system can control how many login users are allowed at any given time, and users log out when finished. But, when using the HTTP protocol, no user logout activity is supported. Consequently, it is desirable, and it is an object of this invention, to provide an access control system for concurrent users in a stateless network which is effective and usable in access applications

which require specific accounting parameters, like online publishing. To this extent, it is also desirable, and a further object of this invention, to provide an access control system which can determine if additional concurrent user logins are permitted, when a user has logged out, and when a user can login if all the available login slots are currently being used.

## SUMMARY OF THE INVENTION

There is disclosed herein a new and useful computer access control system for a stateless network which can keep track of concurrent users assigned to a common account or ID number, and which can also permit logins to single user accounts. The system includes a login manager and a state manager which monitor the status of the various areas and functions of the system. A user login map (ULM) is used to keep track of the number of users logged onto the system. In a preferred embodiment of the system, this map consists of a plurality of 32-bit wide binary words. Changing the value of the binary bits at a predefined position determines whether a specific user account is currently logged into. Single user accounts have one bit assigned to them, whereas multiple user (concurrent) accounts have a plurality of bits assigned to the area which holds the number of current logins.

A user attempting to log into the system enters a user ID and password in the usual manner. Once that is verified, the system obtains a user mask and an internal user ID (IUID) from the user's profile area. The mask is applied to the user login map to determine if the login will be permitted. If permitted, the IUID is entered into a state lookup table (SLT) along with other information about the logged in session.

The user mask defines the area in the user login map that must be checked to see if a login will be allowed. For a single account user, one bit in the login map is examined to see if there is already a login under that account, or same IUID. If so, access will be denied or, in some cases, a forced login may be initiated by the logging on user. If no present login is indicated, the user is logged on and the user login map is updated by setting the appropriate bit in the login map. For a concurrent or multiple account, more than one bit in the login map is examined to see if the maximum number of logins already exists. If not, the requested login is permitted and the user login map is updated by adding one to the binary value in the map.

If the maximum number of logins already exists, the system sets a time-out period for the session that has been in progress the longest. It also informs the logging in user of that time. After the expiration of that time, or if a concurrent user logs off before that time, the login for the requesting user is permitted.

A state lookup table (SLT) is used to keep track of the login sessions in progress. This table includes a session identifier, the IUID used to establish the session, a starting time for the session, and a "time out" time for the session if one has been established. Maintenance of the table is performed by the system login manager and by a state manager. This maintenance includes purging the table of terminated sessions and forcing logouts when a time-out entry has been equalled or exceeded.

## BRIEF DESCRIPTION OF THE DRAWINGS

Further advantages and uses of this invention will become more apparent when considered in view of the following detailed description and drawings, in which:

FIG. 1 is a block diagram of the environment in which the present invention functions;



FIG. 2 is a block diagram illustrating the major components of the invention in an approximate flow path relationship;

FIG. 3 is a representation of a single user mask as used in this invention;

FIG. 4 is a representation of a concurrent user mask as used in this invention;

FIG. 5 is a representation of a user login map (ULM) as used in this invention;

FIG. 6 is a representation of a state lookup table (SLT) as used in this invention;

FIG. 7 is a flow chart illustrating how the access control system functions according to a specific embodiment of this invention;

FIG. 8a is a flow chart illustrating additional access control system functions performed during login by the login manager;

FIG. 8b is a flow chart illustrating additional access control system functions performed during logout by the login manager; and

FIG. 9 is a flow chart illustrating additional access control system functions performed by the state manager according to a specific embodiment of this invention.

#### DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Throughout the following description, similar reference characters refer to similar elements in all of the figures of the drawings.

Referring now to the drawings, and to FIG. 1 in particular, there is shown a block diagram of the environment in which the invention functions. The user 10 is attempting to gain access to the distributed network system 14 through the user access control system 12. The distributed network system 14 could be any of a number of online systems, such as an online publishing system or other Internet web page controlled application. The network is a stateless network which does not need to keep track of logins and logouts, such as the Internet's World wide Web (www) which is based on the HTTP protocol. The control system 12 interfaces between the user 10 and the system 14 to govern the access and to make sure that the access is proper and within the strict rules set out by the owner of the application program to be run over the system. It is emphasized here that the control system 12 is mainly interested in establishing and ending logins, not in providing an accounting or log of activity for billing purposes. If that is desired, it can be done by other means commonly known in the prior art.

FIG. 2 shows the major components of the control system 12 of FIG. 1. The user profile data 16 contains essential login information on a particular individual user. Normally, this information would include the usual user ID and password much like conventional user access control systems. This information would be stored in the data repository 16 during user initial registration or by a system operator. Once access is gained in the normal manner by the user ID and password, additional information in the user profile data repository 16 is retrieved for use by the login system. As illustrated, a user mask 18 and an internal user ID (IUID) are a part of the user profile and are used to further determine the access rights of the user. The mask 18 and the IUID 20 are also placed in the user profile data repository 16 automatically after initial user registration, or manually placed therein by a system operator or administrator.

The mask 18, as will be further described in conjunction with FIGS. 3 and 4, is for use in scanning the data in the user

login map (ULM) 22. This scanning will determine if the login will be permitted. The IUID 20, as will be described further in conjunction with FIG. 6, is for state keeping during user navigation of the service facility (i. e. web pages), and for use in recording session data in the state lookup table (SLT) 24. The table 24 is used, among other things, to determine if a particular concurrent user will be forced off to make way for a new login. All of this is under the control of the login manager 26 with multiple computation methods. The SLT 24 is created by the login manager 26 at system initialization and is maintained by a state manager 27, as will be described in more detail later herein.

FIG. 3 illustrates a mask typical of that used for a single user. Although the present invention allows for the orderly access of concurrent users, single users who have access only one at a time are also processed by the system. The single user mask in FIG. 3 includes data which can define or indicate three parameters. The first parameter is the location of the area in the user login map 22 which will be looked at by the mask. The mask area 28 shows a value of 2, meaning that the second word in the user login map 22 will be used. More detail about the user login map and the application of the mask data will be described in conjunction with FIG. 5.

The mask area 30 shows a value of 1, meaning that the mask works on one word in the login map 22. The mask area 32 is the remainder of an unsigned integer array representing the actual mask that will be applied to the login map 22 in the areas indicated by the areas 28 and 30. As shown here, area or mask 32 is a 32-bit binary word having the 5th most significant bit as 1. All single user masks will have only one bit in the mask equal to 1. The 1 signifies the bit in the login map which must be set or reset to show the login status of the user.

FIG. 4 illustrates a mask typical of that used for a concurrent user. The value of 3 in the mask area 34 indicates that the 3rd word in the login map 22 will be the start of the mask comparison and, according to the area 36 value of 1, only one word will be compared. Since the number of concurrent users a system may permit may exceed one word, the value of area 36 may be larger than 1 in those cases. The ones in the 5th through 8th most significant bits indicate that those four bits are the areas in the login map that will contain the status of 15 users who are allowed for current login with the same master login ID, or IUID. In both the single user and concurrent user masks, the size of the word containing the bits can be other than 32, as shown herein, without departing from the teachings of the invention.

FIG. 5 illustrates a specific valued and structured user login map being used in this embodiment for the login map 22 shown in FIG. 2. According to FIG. 5, the login map is an unsigned long integer array with  $W \times N$  bits, where  $W$  is the word length in bits (32) and  $N$  is the number of words in the map. Only four 32-bit words (40, 42, 44 and 46) are shown, although more or less words and bits per word are within the scope of this invention. The ones in the map indicate the number of current or present logins. For single user ID's, just one bit is used and it indicates that there is no login if zero or that there is a login if one. For concurrent user ID's, more than one bit is used to define the number of present logins for that IUID, with the number being a binary weighted value using all the bits for that IUID. For example, one word would allow  $2^n - 1$  users.

As an example, the single user mask shown in FIG. 3 is compared to the login map values shown in FIG. 5. Referring to both Figures, area 28 indicates that the second word of the map will be the starting place for the comparison, and

area 30 indicates that one word will be compared. Area 32 indicates the actual mask to be compared with the defined word area in the map. Consequently, word 42 will be masked by the bits in area 32. The 1 in area 32 is matched with a 1 in area 42 at the 5th most significant bit position. This tells the login manager that a login is already present for that user IUID, and normally access would be denied. As will be described later, a procedure for forced login is included in the system. If the bit under consideration in the area 42 is 0 at the time of attempted login, a login would be permitted and the bit set to 1 by the login manager.

As another example, the concurrent user mask shown in FIG. 4 is compared to the login map values shown in FIG. 5. Referring to both Figures, area 34 indicates that the third word of the map will be the starting place for the comparison, and area 36 indicates that one word will be compared. Area 38 indicates the actual mask to be compared with the defined word in the map. Consequently, word 44 will be masked by the bits in area 38. The ones in area 38 are matched with a 0110 in area 44 at the 5th through 8th most significant bit positions. This tells the login manager that six logins are already present for that user account. The 4-bit representation is weighted in binary fashion to calculate the 6 users ( $2^2+2^1$ ). Since a value (0) needs to be used to indicate no users, the total number of users that can be represented by the 4-bit number is 15. Consequently,  $2^{32}-1$  can be represented by the complete word and, as stated before, more than one word can be used to represent concurrent users in the login map. Any number of bits greater than 1 can be used for defining the total number of concurrent users permitted to be logged on at the same time. If another login is permitted, the login manager increments or adds one to the binary value in area 44, which would result in the bits 0111 at the same positions used in this example. Therefore, the size of the mask for the user determines whether he has single user or concurrent user access rights and, in the case of a concurrent user, how many users may be logged on at the same time.

FIG. 6 illustrates details of the state lookup table 24 shown generally in FIG. 2. When a user attempts a logon, the state lookup table is used for various functions, such as recording session ID's, active users, and determining the status of logins already in progress. The table, in this embodiment, is a portion of memory in a computer system which is allocated, in run time, to holding this particular information. Each session, which is established after a user login, has an entry created in the table. A session ID 48 is generated dynamically for a session. It may be a numerical value which increases (to a maximum limit) and rotates for each session allowed on the system. A coded value reflective of such things as the user's level of access or date/time logged on, or any other value which can distinguish one session from another.

The internal user ID (IUID) for the session is also entered into the state lookup table. The IUID is obtained from the user profile data in the same manner as the user mask. Both are obtained when the user accomplishes the normal logging procedure, such as entering his own user ID and his password successfully. The user mask and IUID are normally the same for all users assigned to the same account and approved for the same concurrent login privileges. This is true even though each individual user has a separate individual user login ID and password. The internal user ID (IUID) also is of the same form and bit size for all users, thereby facilitating the allocation of memory for its storage in the table. In FIG. 6, the IUID's are all five-digit decimal values.

The starting time for a session is entered under the heading Start Time 52. If there is a logout time mandated by the system, the time is specified under the heading Time Out 54. Times may be actual as shown (year-month-day-hour-minute-second) or a delta or difference from a known time. When a session is in progress, the IUID is present in the table. When a user logs out, the IUID is set to zero, as shown for the 3rd session illustrated. Periodically, the state manager 27 checks the table and purges the 0 IUID sessions which have been logged out. If the maximum concurrent user number is reached, the login manager 26 can set mandatory time out times for the earliest started session having the same IUID. The state manager 27 monitors to see when those times are reached and then removes them from the SLT. In general, the login manager performs the tasks of setting an IUID to 0 and setting a time for time-out in the SLT. The state manager 27 generally performs the tasks of cleaning up the 0 IUID and time out entries in the SLT.

The first two sessions in the state lookup table of FIG. 6 indicate that two concurrent users have logged onto the system. Note that the IUID's are the same for these two sessions. Note also that session 0001002 is set to be limited to a time out of not beyond a specified time, whereas session 0010000 has not been given a time-out time. Forced time-out times can be derived from several circumstances. It can be from the level of access permitted for the individual user, the need to limit a concurrent user's time to allow for another user to logon, or from other circumstances. Session 0100231 has already been logged out, and session 0100459 is currently in progress without a required ending time. Therefore, both do not have time-out times indicated for their session. Session 0100459 is either a single user session or one user of a concurrent user IUID. The state lookup table in FIG. 6 permits the system of this invention to manage the distribution of the account between all those authorized users in such a manner that equitable use of a limited facility can be had by all those authorized to use the system, especially when more than the permitted number of users are trying to use the system at the same time.

FIG. 7 illustrates, in flow chart form, how the user access control system manages the login and session activities according to a specific embodiment of the invention. The first step is to obtain the user identity 56. From the normal user ID and password given at the start of the login, the system next retrieves the user mask data 58 which includes the internal user ID (IUID) and the user mask. The mask data is then compared (block 60) to the user login map (ULM) to determine the current login status. A determination is made from the mask if the user attempting a login is a single User (block 62). As previously indicated, a single 1 bit in the mask indicates a single user, whereas more than one 1 bit indicates a concurrent user.

Assuming that the user is found to be a single user, process flow continues to block 64 where it is determined whether that slot is already being used. That is, whether the one available login allowed for that user's IUID is already in progress. If there is no current login, the bit in the user login map corresponding to the 1 bit in the mask is set to 1, as indicated by block 66, and the login is permitted. Flow control then proceeds to block 68 for additional state lookup table (SLT) processing.

If the comparison in block 64 indicates that the available slot (a logged in session) is already in progress, the user attempting to login is asked if a forced login should be attempted, as indicated in block 70. Such communication between the access control system and the user attempting login can be by conventional methods, such as the sending

of appropriate web pages to the user for response when the system is operating in the Internet environment. If a forced login is not requested, the login attempt is ended (block 72). If the forced login is requested, the login manager 27 terminates the current session (block 74). According to the configuration of the system, there can be several different ways to accomplish this result. In one case, the current user could be logged out immediately and the new login allowed. In another case, the current user could be given a time limit for logging off and notified of the time left, after which the new user would be logged on. The time to wait for logging on in this case could be conveyed to the user waiting to logon. Once the new login is permitted (block 76), the ULM would be updated and flow control proceeds to block 68 for additional state lookup table (SLT) processing.

If the user is found to be a concurrent user in block 62, the system next determines from the mask data if the maximum number of simultaneous logins are existing at the present time (block 78). If not, 1 is added to the user login map (block 80), the login is permitted, and flow control proceeds to block 68 for additional processing. If the maximum number of logins already exists, then the state lookup table (SLT) is consulted to determine which session for the same concurrent user IUID has been established for the longest time. That session is then given a termination or "time out" time (block 82) and that information is entered into the SLT. Flow control then proceeds to block 68 for additional processing. As in the case of the single user forced login situation, the concurrent user here may be advised of the time left for the current session to be timed out, thereby indicating to the logging in user the maximum time he needs to wait until he can get access to the system.

FIGS. 8a and 8b illustrate the additional processing accomplished by the login manager 26 with respect to the SLT. For a login, FIG. 8a shows that a determination is made (block 84) whether there are too many concurrent users already logged on. (This determination is the same as accomplished in block 78 of FIG. 7 and may not be a new determination.) If not, the session is recorded into the SLT as indicated in block 86. If there are too many concurrent users, a session in the SLT is timed out (block 88). Normally, this would be the session that has the earliest starting time. After performing the indicated function, the login manager 26 returns to process other login requests (block 90). For a logout, FIG. 8b shows that the login manager 26 sets the IUID equal to 0 for the recorded session (block 92) in the SLT. Then, the login manager 26 returns to process other login requests (block 94).

FIG. 9 illustrates the additional processing accomplished by the state manager 27. This processing is mostly of a management nature to keep the state lookup table (SLT) 24 up-to-date and to effect any actions that the current status of the table dictates. Beginning at the top of the SLT (block 96), the state manager 27 determines if the session is to be terminated because it has equaled or exceeded the allowed session time, or "time out" time (block 97). If so, the login manager 26 is notified to force a logout (block 98) and the session is deleted (block 100) from the SLT. When there does not need to be a forced logout, the state manager 27 looks at the session entry in the SLT and determines whether it is a terminated session which is still recorded in the table (block 102). Such a condition is indicated by a zero IUID recorded in a session. If such is the case, the session in the SLT is deleted (block 100) and process flow continues to block 104. If there are no sessions to delete, block 100 is bypassed and process flow continues directly to block 104. After a delay for a time "delta" (block 104), the state

manager returns to the top of the SLT to go through the process again. In some cases, the delta time may be essentially zero. The mechanics of this process may take several different forms to scan all of the session entries. For example, all entries may be looked at on each pass, or the state manager may process a single session and then go down the list on a next scan, until all of the sessions in the SLT have been scanned for any required action by the state manager.

It is emphasized that numerous changes may be made in the above-described embodiments without departing from the teachings of the invention. For example, the system may not only be used with an online login procedure involving the world wide web on the Internet, but may also be used with inhouse or local computer networks that are setup to keep track of a maximum number of concurrent users allowed to access the system at the same time. Also, the system described herein may be useful in allowing access to a restricted machine or entry system which needs to limit concurrent access to a fixed number of users.

It is intended that all of the matter contained in the foregoing description, or shown in the accompanying drawings, shall be interpreted as illustrative rather than limiting.

Having thus described the invention, what is claimed is:

1. Apparatus for the control of user access over a stateless network to a restricted system which permits simultaneous access by concurrent users, said apparatus comprising:

means for assigning an internal user ID to each user;

mapping means for recording the number of current logins, the mapping means being in the form of a user login map which contains a plurality of binary words, with each of said binary words containing a plurality of binary bits, and wherein one or more of said binary bits in the same word are indicative of the number of current logins for a particular internal user ID;

validating means for determining if a requested login is permitted; and

logging means for temporarily keeping a record of each access session in progress wherein only one bit of a word is used to indicate the current status for a single user internal user ID.

2. Apparatus for the control of user access over a stateless network to a restricted system which permits simultaneous access by concurrent users, said apparatus comprising:

means for assigning an internal user ID to each user;

mapping means for recording the number of current logins, the mapping means being in the form of a user login map which contains a plurality of binary words, with each of said binary words containing a plurality of binary bits, and wherein one or more of said binary bits in the same word are indicative of the number of current logins for a particular internal user ID, and wherein a bit group containing a plurality of bits of the same word are used to indicate the current number of logins for a particular concurrent user internal user ID, with said number being determined by weighting individual bits in the group;

validating means for determining if a requested login is permitted; and

logging means for temporarily keeping a record of each access session in progress.

3. The control apparatus of claim 2 wherein a word has thirty-two bits.

4. Apparatus for the control of user access over a stateless network to a restricted system which permits simultaneous access by concurrent users, said apparatus comprising:

mapping means for recording the number of current logins;

means for assigning an internal user ID to each user;

validating means for determining if a requested login is permitted, the validating means including a user mask of binary bits for determining the current logins as recorded in the mapping means, and wherein the validating means also includes number and location identifiers about the words in the mapping means which will be compared with the user mask to determine the current logins; and

logging means for temporarily keeping a record of each access session in progress.

5. A method of controlling user access over a stateless network to a restricted system which permits simultaneous access by concurrent users, said method including the steps of:

assigning an internal user identification (IUID) to each user;

maintaining a user login map which is indicative of the number of current logins for a particular IUID, wherein the user login map contains a plurality of binary words, with each of said binary words containing a plurality of binary bits, and wherein one of said binary bits of a word is used to indicate the current status for a single user IUID;

providing a user mask of binary bits for use with said login map;

comparing said user mask with said login map to determine if a login will be permitted; and

authorizing the login if said comparison indicates that the maximum number of logins allowed for said IUID will not be exceeded by said authorizing.

6. A method of controlling user access over a stateless network to a restricted system which permits simultaneous access by concurrent users, said method including the steps of:

assigning an internal user identification (IUID) to each user;

maintaining a user login map which is indicative of the number of current logins for a particular IUID, wherein the user login map contains a plurality of binary words, with each of said binary words having a bit group containing a plurality of bits that are used to indicate the current number of logins for a particular concurrent user IUID, said number being determined by weighting individual bits in the group;

providing a user mask of binary bits for use with said login map;

comparing said user mask with said login map to determine if a login will be permitted; and

authorizing the login if said comparison indicates that the maximum number of logins allowed for said IUID will not be exceeded by said authorizing.

7. A method of controlling user access over a stateless network to a restricted system which permits simultaneous access by concurrent users, said method including the steps of:

assigning an internal user identification (IUID) to each user;

maintaining a user login map which is indicative of the number of current logins for a particular IUID, wherein the user login map contains a plurality of binary words, with each of said binary words containing a plurality of binary bits, and wherein one or more of said binary bits in the same word are indicative of the number of current logins for a particular IUID;

providing a user mask of binary bits for use with said login map, the user mask including number and location identifiers about the words in the user login map which will be compared with the user mask to determine the current logins;

comparing said user mask with said login map to determine if a login will be permitted; and

authorizing the login if said comparison indicates that the maximum number of logins allowed for said IUID will not be exceeded by said authorizing.

8. A method of controlling user access over a stateless network to a restricted computing service system which permits simultaneous access by concurrent users, said method including the steps of:

assigning an internal user identification (IUID) to each user;

maintaining a user login map (ULM) which is indicative of the number of current logins for a particular IUID, said login map including a plurality of binary words, with each of said binary words containing a plurality of binary bits, and wherein one or more of said binary bits in the same word are indicative of the number of current logins for a particular IUID;

providing a user mask of binary bits for use with said login map, with the user mask including number and location identifiers about the words in the user login map (ULM) which will be compared with the user mask to determine the number of current logins, said user mask defining the bits in said user login map which indicate the number of current logins for a particular IUID;

comparing said user mask with said login map to determine if a login will be permitted;

authorizing the login if said comparison indicates that the maximum number of logins allowed for that IUID will not be exceeded by said authorizing;

updating the user login map (ULM) when a user login is authorized, said updating resulting in the user login map (ULM) then being indicative of the new number of users presently logged on;

temporarily logging particulars about each session in progress in a state lookup table (SLT), with said particulars including at least a session ID, the starting time of the session, the IUID used to authorize the session, and any ending time established for the session; and

establishing, when the maximum number is logged on, a time-out time for a current session and recording that time in said state lookup table.

\* \* \* \* \*

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PATENT APPLICATION  
USSN 10/824,180

**Appendix D: *Marcus***



US005933488A

**United States Patent** [19]  
**Marcus et al.**

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[45] **Date of Patent:** **Aug. 3, 1999**

[54] **AUTOMATED METHOD AND ARRANGEMENT FOR INTEGRATING A TELEPHONE SYSTEM WITH AN ANNOUNCEMENT SYSTEM**

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[58] **Field of Search** ..... **379/76, 217, 67.1, 379/88.16, 88.23, 88.24, 88.25, 88.26, 88.15**

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5,131,048	7/1992	Farenelli et al.	.....	381/81
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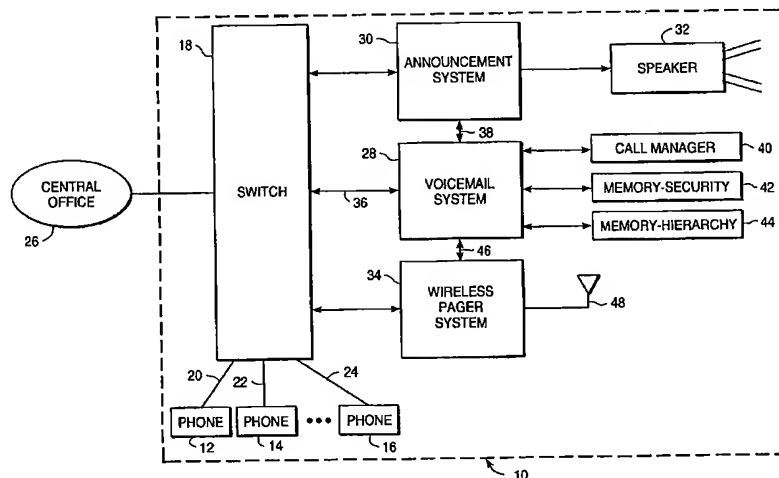
##### **FOREIGN PATENT DOCUMENTS**

0 536 949 A2 4/1993 European Pat. Off. .... H04M 3/54

#### [57] **ABSTRACT**

A method and arrangement of utilizing an announcement system to provide paging capability for a facility includes automating the integration of a telephone switch, a voicemail system, and an announcement system. An unanswered call to a telephone of the facility is forwarded to the voicemail system, establishing a first connection between the telephone of the calling party and the voicemail system. The caller is presented with the option of recording a message or initiating a broadcast of an audible page announcement. If the announcement option is selected, a second connection that is separate from the first connection is formed from the voicemail system to the announcement system. An audible announcement identifies the availability of the call for retrieval by the particular called party. In the preferred embodiment, access to the waiting call is restricted to either or both of verification of a password and verification that the retrieval is from one of a limited number of authorized telephones. Security and privacy are further enhanced by restricting access to the announcement procedure in accordance with the preferred embodiment. Multi-tier call notification may be employed, with differences in the tiers being based either upon regions of broadcast (e.g., localized versus general-facility announcements) or upon modes of paging (e.g., overhead announcements versus a page to a particular remote page device).

**16 Claims, 3 Drawing Sheets**



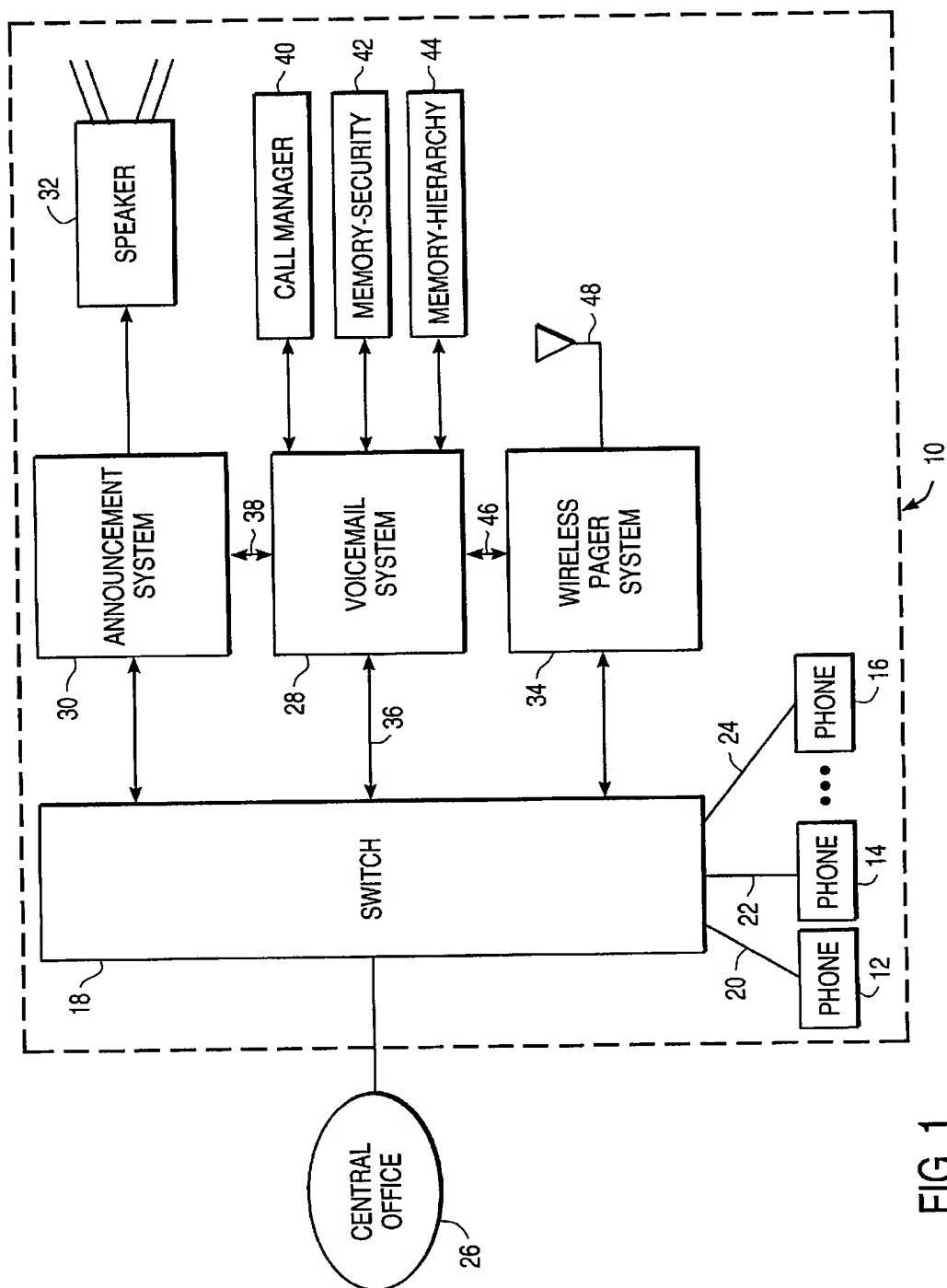


FIG. 1

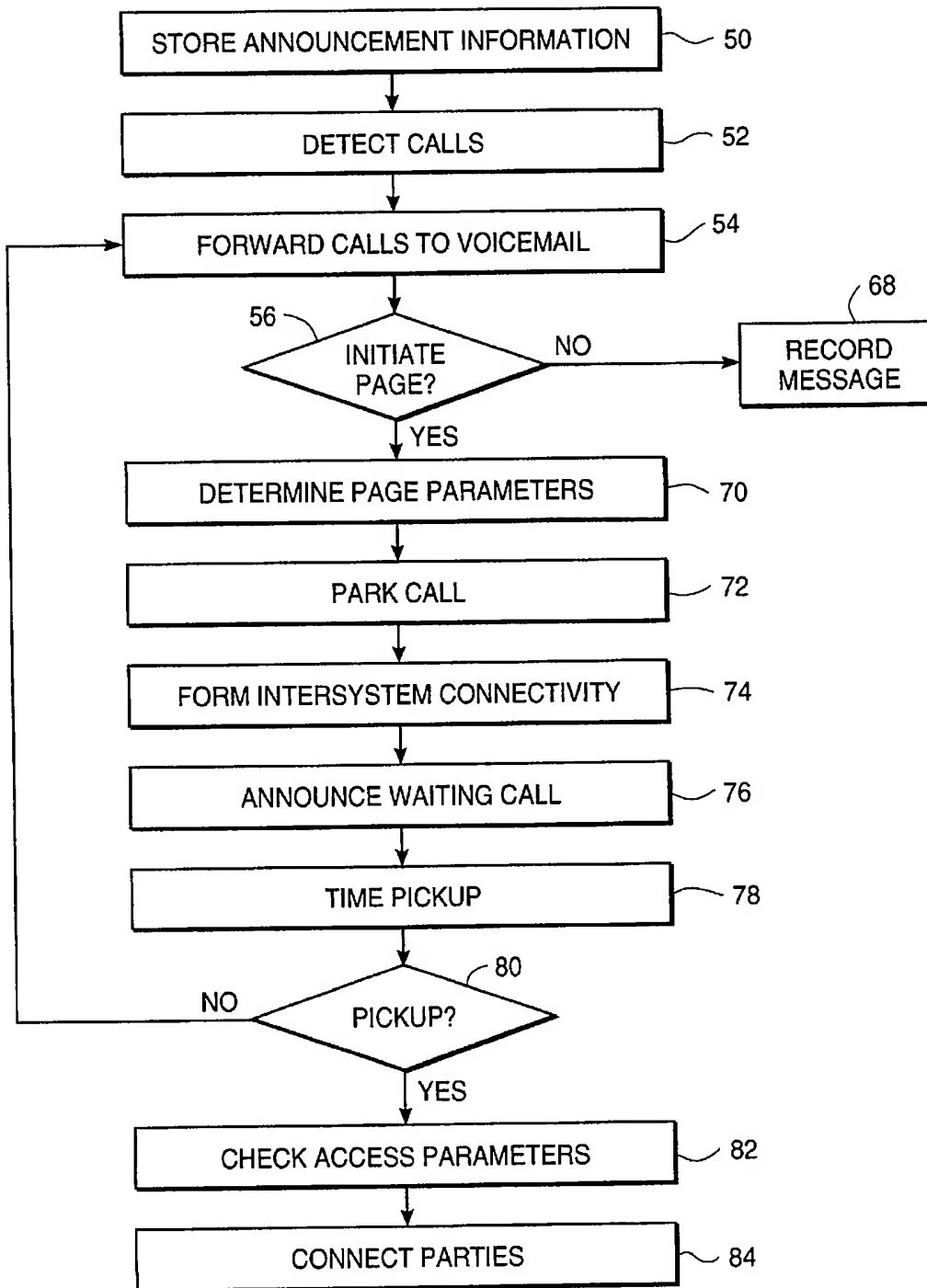


FIG. 2



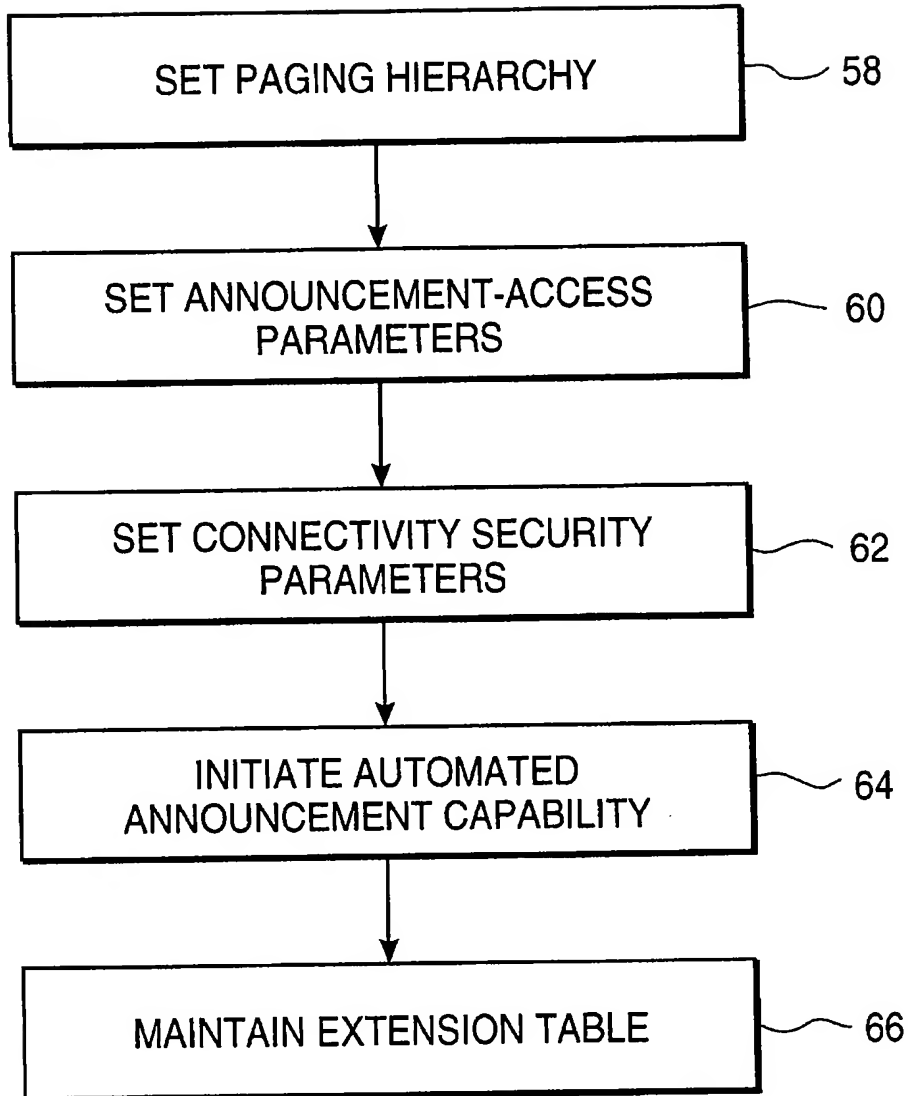


FIG. 3

# **AUTOMATED METHOD AND ARRANGEMENT FOR INTEGRATING A TELEPHONE SYSTEM WITH AN ANNOUNCEMENT SYSTEM**

## **BACKGROUND OF THE INVENTION**

The invention relates generally to methods and systems for notifying a called party that a waiting call is available for pickup and more particularly to automating an announcement system for a facility having multiple telephone units.

## **DESCRIPTION OF THE RELATED ART**

A business or other facility which includes a number of telephones may include a telephone switch that allows direct inward dialing (DID) to a desk of a particular person within the facility. For example, a private branch exchange (PBX) may be used to assign a different extension number for each PBX station line that extends to a telephone. The DID feature accommodates an automatic routing of a call from outside of the facility to the telephone assigned to the called party. Routing of intra-facility calls is also automatic.

If a facility has an announcement system, such as an overhead paging system, the PBX is often configured to route unanswered calls to an operator or receptionist. For example, a telephone in the office of a cardiologist may be allowed to ring four times before the call is routed to an operator employed at a hospital. The operator greets the caller and may offer to page the cardiologist using the overhead system. If the caller requests the page, the operator places the call on hold and issues the page. The call is then monitored to determine whether a person picks up the call. The monitoring may be performed by the operator or by the PBX. Monitoring by the PBX may be implemented by setting a maximum time for which the call can be parked, and generating a ring-back to the operator if the maximum time is exceeded.

One concern with this process is that there are often privacy and security issues. In the hospital example, the parked call may be picked up by someone other than the cardiologist, since the announcement typically identifies both the doctor and the extension on which the call is parked. A calling party may be unaware that he or she is speaking to a person posing as the called party.

Another concern is that the process is labor-intensive. The operator or receptionist must speak with the calling party prior to initiating the announcement, must articulate the announcement, and must handle the ring-back calls if the paged person does not pickup the extension. For the ring-back calls, the operator may be required to take a message or to offer the option of transferring the call to a voicemail system.

Yet another concern in the use of overhead announcement systems to provide call notification involves human inconsistencies. Different persons will have different voice qualities, amplitudes, and clarifies. As a result, there may be some difficulties in understanding pages.

With the exception of the security concern, there have been improvements to the call-notification process. For example, the ring-back situation for unanswered pages may transfer a caller directly to the voicemail box of the called party in another development. U.S. Pat. No. 4,741,020 to Deal et al. describes an overhead announcement system for paging store clerks having specialized knowledge to help customers. For customers on a telephone, clerks are paged using a two-part message in which the first part, typically a

department name, is determined by a button pushed by the store's telephone operator and the second part consists of the telephone line number. A typical message would be "Plumbing, line 2." The use of stored-speech messages to provide the paging standardizes the messages and announcements. However, the security issues remain. Moreover, the announcement process still requires intervention by a telephone operator of the facility.

U.S. Pat. No. 5,131,048 to Farenelli et al. describes an audio distribution system for use in homes. The system controls the broadcast of different types of signals through speakers located in various zones, using a control circuit which responds to inputs of music, intercom, page, and doorbell signals. A telephone handset at the home includes a page button. When the page button is depressed, the telephone handset generates a monaural paging signal. The system includes a page interface circuit that is responsive to the telephone handset to generate a control signal, serve as a power source to the telephone handset, and process an audio signal from the telephone handset. The system operates well within the home environment, but its application to a business facility is limited.

U.S. Pat. No. 5,541,981 to Lynn describes an automated announcement system that allows messages to be played on a public address system and/or displayed on a display device in accordance with a predefined schedule that maintains a minimum interval between messages. The system resolves conflicts between messages to be played at the same time by assigning priorities to the messages. An example of a use of the system is to play recorded announcements that inform customers of special sale events or promotions. In addition to the prerecorded messages, live announcements may be presented. The live announcements may be provided using a connection to a PBX pager output. That is, a call may be made to the PBX by a person who wishes to make an announcement. Preferably, a multi-level password protection scheme is implemented to restrict specific system functions to authorized users. The availability of a live announcement option may require input of a password.

In addition to overhead announcement systems, wireless pagers may be used to notify a party that a call is available. U.S. Pat. No. 4,825,456 to Rosenberg discloses an apparatus for providing call notification via pagers. A number of pager transmitters are connected to telephone extension lines by means of interface circuits. Each interface circuit includes a ring signal detector to detect activation of the associated telephone extension line. The detection triggers a pager transmitter activator, which activates the pager of the appropriate individual.

A similar apparatus is described in U.S. Pat. No. 4,642,425 to Guinn, Jr. et al. An incoming call is placed on hold while the pager of the called party is activated. The called party is then able to pickup the call at a local telephone within the facility. If there is a one-to-one correspondence between the calls and the pagers that are activated in response to the call, the security concerns are alleviated. However, the increase in security comes at a sacrifice of increased system costs, relative to overhead announcement systems.

What is needed is a method and arrangement for utilizing an announcement system to provide paging capability for facilities having a large number of telephones, with the utilization preferably being implemented in a cost-efficient and privacy secure manner.

## **SUMMARY OF THE INVENTION**

A method and arrangement for utilizing an announcement system to provide paging capability includes automating

integration of a telephone switch, a voicemail system, and an announcement system of a facility having a number of telephones, with each telephone being associated with a particular user. Unanswered calls are forwarded to the voicemail system, so that a first connection is formed between the voicemail system and a telephone of the calling party. A second connection is then formed between the voicemail system and the announcement system. The second connection is separate from the first connection, preventing the calling party from entering a live announcement. Instead, as an automated response to establishing the second connection, an audible announcement is triggered. The audible announcement identifies the availability of the call for retrieval by a particular called party. In the preferred embodiment, the access to the waiting call is restricted by either or both of verification of a password and verification that the retrieval is from one of a limited number of authorized telephones.

The preferred embodiment further includes parking the call from the calling party prior to triggering the audible announcement, thereby terminating the first connection to the voicemail system and allowing immediate access to the call by the called party. The call is parked on a known telephone line, such as a "dummy extension." The audible announcement includes identifications of both the known telephone line and the called party, i.e., the identified user. A threshold time for pickup is preselected. If the call is not retrieved prior to expiration of the threshold time, the waiting call is returned to the voicemail system.

Still referring to the preferred embodiment, the audible announcement is a first tier of a multi-tier notification scheme. The different tiers may be based upon regions. For example, the first announcement may be a localized announcement within the facility, while the second tier may be audible only within a different localized region or may be a general-facility announcement. Alternatively, the differences in the tiers of the multi-tier notification scheme may be based upon modes of paging the identified party. For example, the first mode is the public announcement system, while a backup mode may be to notify a wireless pager carried by the identified party. Alternative announcement systems are also available. As an example, one audible announcement system may include overhead speakers, while a second announcement system may use the intercom feature of a facility having speaker telephones.

As previously noted, the calling party is connected to the voicemail system prior to any connection to the announcement system. Therefore, the calling party may be presented with certain options. The calling party may select between leaving a voice message and initiating the announcement process. In one embodiment, the access to the announcement process is restricted by input of a password or by recognition that the calling party is at one of a designated number of telephones. If the multi-tier notification scheme is utilized, the transitions from one tier to the next may be strictly time-related or may be implemented at the option of the calling party, e.g., if the use of one tier fails to result in a call pickup, the unanswered call is returned to the voicemail system and the caller is presented with the option of triggering the second tier or leaving a message.

#### BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a block diagram of a facility having an automated integration of a switch, a voicemail system, and an announcement system in accordance with the invention.

FIG. 2 is a process flow of steps for utilizing the intersystem arrangement of FIG. 1 for providing paging capability.

FIG. 3 is a process flow of initiating the intersystem arrangement of FIG. 1.

#### DETAILED DESCRIPTION

With reference to FIG. 1, a facility 10 is shown as including a number of telephones 12, 14 and 16. Each telephone is connected to a switch 18 via a different station line 20, 22 and 24. The switch may be a PBX, but this is not critical. While not shown in FIG. 1, the switch preferably includes "dummy extensions," i.e., extensions which are not directly tied to a telephone, allowing a call to be parked for subsequent retrieval.

A call from outside of the facility 10 is routed to the switch 18 via a central office 26, as is well known in the art. Each of the telephones 12, 14 and 16 is assigned to a particular user and has a unique phone number. A direct inward dialing (DID) feature of the switch 18 permits an external caller to reach a particular phone of one of the users. Thus, the called party can be identified by the phone number dialed by the calling party. This phone number is received in the calling information during the setup of the call.

Internal calls from one of the telephones 12, 14 and 16 to another one of the telephones require only the extension number to be dialed by the calling party. Often, this is a two-digit to a five-digit number that is identical to the last several digits that must be dialed by an external caller.

An unanswered internal or external call to one of the telephones 12, 14 and 16 may be directed to a voicemail system 28. The forwarding of a call to a voicemail system is known in the art. The forwarding is typically an automated rerouting by the switch 18. In addition to the switch and the voicemail system, the facility includes an announcement system 30. The announcement system provides audible announcements via at least one speaker 32, and is distinguishable from a wireless pager system 34. The speaker or speakers may be overhead devices or may be contained within each one of the telephones 12, 14 and 16. That is, the telephones may be speaker phones. Other schemes for audibly identifying the availability of calls for pickup by particular parties may also be utilized.

In operation, intersystem cooperation is achieved without requirement of an operator. When a call is unanswered, a first connection 36 is formed between the switch 18 and the voicemail system 28 to connect the calling party with the voicemail system. In the preferred embodiment, the caller is presented with the option to either leave a voice message or initiate an announcement process. For example, the caller may be instructed to press the "1" key of a telephone keypad to select the message option, or to press the "2" key to initiate the announcement process. If the announcement option is selected, a second connection 38 is established. The second connection is illustrated as a direct connection between the voicemail system 28 and the announcement system 30, but typically the connection is formed via the switch 18. A prerecorded message is audibilized via the speaker or speakers 32. The triggered prerecorded message identifies the called party and an extension at which the waiting call is parked. If the switch 18 is utilized to park the call, the first connection 36 may be terminated upon parking the call. On the other hand, if the voicemail system 28 is used to park the call, the first connection 36 remains intact. Particularly in embodiments in which the voicemail system is used to park the call, a call manager 40 is beneficial in handling calls routed to the voicemail system. Two memory modules 42 and 44 are also shown as being connected to the voicemail system. The functions of the memory modules will be described fully below.

Optionally, the wireless pager system 34 may be activated if the paged party does not pickup the waiting call within a preselected period of time. The call is again forwarded to the voicemail system 28, which automatically establishes a connection 46 with the wireless pager system. The information required for paging the called party is transferred from the voicemail system 28 to the wireless pager system. This information may be stored at the second memory module 44. The type of pager system is not critical to the invention. In one embodiment, radio frequency signals that are specific to one remote pager device are transmitted via an antenna 48.

One advantage of the invention is that the automation of the call-notification operations eliminates the need of a full-time operator at the facility 10. Another advantage is that prerecorded paging messages may be used to provide a uniform voice and format and to ensure sufficient clarity, amplitude and quality.

Another important advantage relates to security and will be described fully below. Access to the announcement procedure may be restricted by use of a password or by designating a limited number of authorized telephones. Moreover, access to calls that have been announced may be limited by requiring a password or by designating only certain phones as authorized phones for retrieving a particular parked call. The automated process allows each person who may be the object of a page to be reached within selected paging zones, with password protection.

The call-notification process will be described more fully with reference to FIG. 2. In step 50, announcement information is stored. Typical announcements will include the identification of a person and an extension at which a call is parked. In a hospital setting, an exemplary announcement is "Doctor Green, please pickup extension 2136." The various announcements are stored at the voicemail system 28, but may be stored at the announcement system 30 of FIG. 1.

In step 52, external and internal calls directed to one of the telephones 12, 14 and 16 are detected and routed using conventional techniques. The switch 18 is used to route the calls. PBXs allow a user of one of the telephones 12, 14 and 16 to notify the PBX that the user will be away from the telephone, so that incoming calls are immediately routed to the voicemail system 28. PBXs also allow the phone to ring a set number of times, but then presume that the user is unavailable. In step 54, calls directed to an unavailable user or to a busy phone are forwarded to the voicemail system.

Conventional voicemail systems merely allow a calling party to leave a message in the voicemail box of the called party. However, the preferred embodiment of the invention is one in which the calling party is presented with options. In a personalized greeting, the called user may instruct the caller to press a certain key (e.g., "1") or sequence of keys to leave a message, or to press a different key (e.g., "2") or sequence of keys to initiate a page announcement. The decision step is shown at 56 in FIG. 2.

In addition to recording the page announcement information at step 50 and recording the personalized greeting within the voicemail system 28, there are other setup options and requirements. FIG. 3 illustrates some of the possible setup steps. Firstly, a paging hierarchy may be formed 58. As previously noted, the hierarchy may be based upon area, based upon modes of paging, or both. An area-based hierarchy may have a first level in which the triggered announcement is audible on only one floor of a hospital and may have a second level in which the page announcement is broadcast on all floors of the hospital. A mode-based hierarchy for the facility 10 of FIG. 1 may utilize the announcement system

30 to broadcast the page announcement, with the wireless pager system 34 being used if the page announcement does not result in a call pickup. In the preferred embodiment, the hierarchy is determined on a user-by-user basis. That is, each user is enabled to select a desired hierarchy. However, the selection may be facility-wide. The selected hierarchy is stored in the memory module 44 of FIG. 1.

The setup step 60 in FIG. 3 provides a first level of security. Optionally, only designated individuals are authorized to utilize the announcement system 30. All other callers may merely leave a message at the appropriate voicemail box of the voicemail system 28. In one embodiment, the announcement-access is enabled only if a caller inputs a password, such as a particular sequence of digits. For example, there may be a personal identification number (PIN) that is input using the keypad of a conventional telephone. As an alternative to the password-based access enablement, there may be a limitation to the telephones that may be used to trigger a page announcement. As one example, automated access to the announcement system may be restricted to calls initiated from one internal telephone 12, 14 and 16 to another one of the internal telephones. In another example, caller identification information received as a result of an incoming external call may be used as a basis to determine announcement-access. That is, the announcement-access parameters set in step 60 may be a designation of certain external telephones to which access is to be restricted. Similar to step 58, the parameters of step 60 may be individualized or may be facility-wide. The settings are stored in the memory module 42 of FIG. 1.

In step 62, connectivity-security parameters are set. These parameters may be used to limit the access to a waiting call. Privacy and/or security interests may dictate limitations on the availability of call pickup. As an example, a caller may not recognize a doctor by voice, so that any person within a hospital could attempt to pose as a paged doctor and ask personal questions. The connectivity-security parameters set in step 62 may require a person attempting to retrieve a call to enter a password (e.g., a PIN) before the parties are connected. In another embodiment, these retrieval limitations are related to designating certain internal phones 12, 14 and 16 as authorized phones. A particular user may designate a telephone in a backup office of the user as the only authorized phone for retrieving calls that are the subjects of page announcements identifying the user. The retrieval limitations are preferably selected on a user-by-user basis. The parameters are stored in the memory module 42 of FIG. 1.

The automated announcement capability is then initiated at step 64. As will be explained more fully below, the system monitors available extensions for parking the calls that are the subjects of page announcements. Step 66 is included to identify the process of maintaining the extension table.

Returning to FIG. 2, the decision step 56 is determined at a first level by the announcement-access parameters selected in step 60 of FIG. 3 and stored in the memory module 42 of FIG. 1. At a second level, the calling party selects between recording a message and triggering a broadcast of a page announcement. Step 68 of recording a message is implemented using conventional techniques of voicemail systems. On the other hand, if the calling party is authorized and elects the announcement option, the relevant page parameters are determined at step 70. The selected paging hierarchy of the memory module 44 may dictate that the page announcement is to be made only within a localized region. In some embodiments, the calling party is presented with options relating to the area in which the page announcement is to be broadcast.

The voicemail system 28 then parks the call at step 72. A limited number of "dummy extensions" may be configured in the switch 18. Each of the dummy extensions is capable of holding a waiting call. The voicemail system may implement this step by sending a park command to the switch 18. As an example, the park command may be PARK 2136, where PARK is the system PARK command or button and where 2136 is one of the dummy extensions. In order for the voicemail system to monitor the extensions, the extensions must be preconfigured within the voicemail system. As noted with reference to step 66 in FIG. 3, the voicemail system may use an extension table to track the hold-and-retrieval process. While the call is parked at a dummy extension, the caller will hear ring-back tone or on-hold music, depending upon the configuration of the switch 18.

The voicemail system 28 is then able to release the line, since the call is parked on the dummy extension. The voicemail system then goes off-hook on an available channel/port to form the second connection 38 between the voicemail system 28 and the announcement system 30. This intersystem connectivity is shown at step 74 in FIG. 2. While the connectivity is illustrated as a direct connection in FIG. 1, typically the connectivity requires the operation of the switch 18. The off-hook condition of the available channel/port relates to a connection to the switch 18. The voicemail system dials P, where P is the system paging access command. This may be controlled by the call manager 40. The call manager then causes the appropriate announcement information to be played, e.g., "Doctor Green, please pickup extension 2136." The announcement is shown at step 76 in FIG. 2. The interconnection between the voicemail system 28 and the announcement system 30 may then be terminated.

Extension 2136 is marked in the extension table as being occupied by the waiting call. The next caller requesting an announcement may be parked at dummy extension 2137, until all of the available dummy extensions are utilized. If no dummy extension is available for a call, the voicemail system can transfer the next caller to an available operator.

In step 78, the time required for a paged party to retrieve a call is monitored. Preferably, a recall time is established by configuring the voicemail system 28 or the switch 18. If during the decision step 80 the parked call is retrieved, any relevant access parameters are checked at step 82. This includes enforcing the connectivity-security parameters set at step 62 in FIG. 3. The security check is intended to preserve the privacy of the calling party and/or to reduce the susceptibility of the intersystem process to unauthorized dissemination of information. Provided that the person attempting to retrieve the call is authorized, the parties are connected at step 84.

The voicemail system 28 preferably includes a parameter that defines a wait-time between parking calls on an individual dummy extension. Immediately after a call is parked on the extension, the voicemail system starts the timer. After the time expires, the voicemail system assumes that the extension is again available for a parked call. This parameter should be a few seconds longer than the recall time described with reference to the step 78 of timing the call retrieval.

The call retrieval time relevant to steps 78 and 80 is configured in the switch 18 as the maximum time that a call remains parked on an extension before a recall is initiated. In the embodiment of FIG. 2, if the call is not retrieved before expiration of the designated time, the call is again forwarded to the voicemail system at step 54. The voicemail system typically receives some identifying information in

the signaling channel, if one exists (e.g., an ISDN environment). At the least, caller identification information is forwarded to the voicemail system with an indication that the call is a returning one from the PARK condition. As a result, the voicemail system plays the appropriate prompt, such as "Doctor Green did not answer the page." In the preferred embodiment, the prompt also includes options. The caller may again be presented with the option of recording a message at step 68. In a multi-tier scheme, the caller may be presented with the option of implementing a second tier of call notification. As previously noted, the second tier may be a difference with respect to the area in which an audible announcement is broadcast, or may be a switch to a different system. In FIG. 1, the call manager 40 may initiate the connection 46 to activate the remote pager of the called party. While the connection 46 is shown as the direct connection between the voicemail system 28 and the wireless pager system 34, typically the interaction between the two systems is achieved utilizing the switch 18. For example, the voicemail system may go off-hook on an available channel/port to the switch 18 and dial the appropriate access command for activating the wireless pager system. Some wireless pager systems allow the display of numeric codes on the remote pager devices. In such an embodiment, the voicemail system may be used to outpulse the required dual tone multi-frequency (DTMF) tones to notify the user that he or she can call in and pickup the parked call. Pagers that include alphanumeric displays are contacted by the voicemail system using the appropriate protocol for the particular system.

Remote pager devices may play short voice messages. In such a situation, the voicemail system 28 of FIG. 1 may contact the pager system 34 and play the same message that was sent to the announcement system 30 for broadcast. A special external pickup feature may be implemented in the switch 18 to allow a user to call in from an external phone in order to retrieve the parked call. As an alternative, the paged external caller may contact an operator at the facility 10 and request that the operator establish the connectivity between the parties.

In embodiments that include the multi-tier notification scheme, the appropriate sequence of steps that follow the decision step 56 in FIG. 2 are followed a second time. Thus, the parked call is either retrieved prior to the expiration of the time limit of step 78 and the parties are connected at step 84, or the call is returned to the voicemail system from the decision step 80. If all of the tiers are implemented without success, the calling party is informed that the only remaining option is recording a message at step 68.

As an alternative to the embodiment described above, the unanswered call may be parked logically or physically in the voicemail system 28. The user who is paged would then access the call by logging onto the voicemail system. As another alternative to the arrangement described above, the central office 26 of FIG. 1 may perform the functions of the switch 18. That is, an on-site switch is not critical.

While the invention has been described and illustrated as including a "parking lot" of dummy extensions, this is not critical. Switches having built-in parking areas are known, so that there is no need for the preconfiguration of dummy extensions. A system parking area is sometimes referred to as a system park, a system orbit, or an array of system spaces.

What is claimed is:

1. A method of utilizing an announcement system to provide paging capability for calls forwarded to a voicemail system of a facility having a plurality of telephones, each

telephone being associated with a particular user, said method comprising steps of:

directing a call received at said facility to a specific telephone associated with an identified user, said call being intended for said identified user;

transferring said call to said voicemail system as an automated response to determining that said specific telephone has not been answered within a predetermined time interval, including establishing a first connection between said voicemail system and a telephone of a calling party, said voicemail system being capable of storing a voice message from said calling party for subsequent retrieval by said identified user;

as a first step establishing a second connection between said voicemail system and said announcement system, said second connection being separate from said first connection; and

parking said call on a known telephone line to terminate the first connection;

establishing a second connection between said voicemail system and said announcement system, said second connection being separate from said first connection; and

as an automated response to establishing said second connection, triggering an audible announcement of availability of said call for pickup by said identified user;

wherein the audible announcement is capable of verbally identifying said known telephone line and said identified user;

wherein at least one of the steps of triggering said audible announcement and establishing connectivity is selectively implemented to restrict access to either or both of triggering said areawide audible announcement and said pickup of parked call at said telephone line; and

as a second and following steps triggering said audible announcements in tiers of a multi-tier call-notification scheme in which differences in tiers are based upon at least one of regions of said facility in which said audible announcement is broadcast and modes for identifying said identified user.

2. The method of claim 1 further comprising a step of selecting a threshold time for pickup of said call by said identified user following said audible announcement, wherein said call is returned to said voicemail system for recording a voice message from said calling party upon expiration of said threshold time.

3. The method of claim 1 further comprising a step of routing said call such that said call is accessible by said identified user via a third connection, wherein establishing said third connection includes imposing at least one access restriction.

4. The method of claim 3 wherein said step that includes imposing said at least one access restriction further includes requiring input of a predetermined password prior to establishing said third connection.

5. The method of claim 3 wherein said step that includes imposing said at least one access restriction further includes storing identifications of a limited number of said telephones through which calls to said identified user can be accessed.

6. The method of claim 1 wherein said step of establishing said second connection is executed selectively to accommodate restrictive access to said announcement system based upon identification of said calling party.

7. The method of claim 6 wherein said step of accommodating restrictive access includes requiring said calling

party to input a password as a condition to establishing said second connection.

8. The method of claim 6 wherein said step of accommodating restrictive access includes storing caller identification information indicative of selected telephones and further includes comparing said stored caller identification information to call data received in establishing said first connection, said call data being indicative of said telephone of said calling party.

9. A call-notification method for a facility having a plurality of telephones and an announcement system; with each telephone being associated with a particular user, said method comprising steps of:

determining a presence of a call directed to a first telephone that is associated with a first user;

presenting options to a calling party of said call to record a voicemail message or to trigger an audible announcement, said options being presented when said call is unanswered at said first telephone;

parking said call;

in response to selection of said option to trigger said audible announcement, as a first step triggering an areawide audible announcement on the said announcement system that verbally identifies said first user as having an available call; and

establishing connectivity of said call to one of said telephones in response to pickup of said parked call; and

as a second and following steps triggering said audible announcements in tiers of a multi-tier call-notification scheme in which differences in tiers are based upon at least one of regions of said facility in which said audible announcement is broadcast and modes for identifying said identified user;

wherein at least one of steps of presenting said option to trigger said audible announcement and establishing connectivity is selectively implemented to restrict access to either or both of triggering said areawide audible announcement and said pickup of said parked call.

10. The method of claim 9 wherein said step of presenting said options includes connecting said call to a voicemail system and providing a voicemail prompt that presents said options.

11. The method of claim 9 wherein said selective implementation includes storing a password for each user such that there is a one-to-one correspondence between passwords and said users.

12. The method of claim 9 wherein said selective implementation includes storing identifications of a limited number of telephones to which said access is extended.

13. An intersystem arrangement for a facility having a plurality of telephones comprising:

a switch for handling connections for calls directed to and from said telephones;

a voicemail system connected to said switch to receive calls which are unanswered at telephones to which said calls are directed, said voicemail system having established voice prompts, including a first voice prompt indicative of an option to trigger an areawide audible announcement of a called party, park the said received call at a known telephone line on the said switch, said voice prompts including a second voice prompt indicative of an option to record a message from a caller;

an announcement system responsive to a selection of said option of said first voice prompt, said announcement

**11**

system being connected to speaker means for audibilizing said areawide audible announcement that verbally identifies said known telephone line and identified user in a multi-tier call-notification scheme in which differences in tiers are based upon at least one of regions of said facility in which said audible announcement is broadcast and modes for identifying said identified user; and

security means for restricting access to call announcement and pickup capability provided by interconnection of said voicemail system with said switch and said announcement system.

**12**

**14.** The intersystem arrangement of claim **13** wherein said security means includes memory containing passwords having a one-to-one correspondence with authorized users.

**15.** The intersystem arrangement of claim **13** wherein said security means includes memory containing identifications of telephones for which said access is authorized.

**16.** The intersystem arrangement of claim **13** wherein said security means relates to restricting access to retrieval of calls which are unanswered and which are identified in one of said areawide audible announcements.

\* \* \* \* \*

**Appendix E**

***Evidence Appendix***

Other than the reference attached to the Appeal Brief as Appendix B, no evidence was submitted pursuant to 37 C.F.R. §§ 1.130, 1.131, or 1.132, and no other evidence was entered by the Examiner and relied upon by Appellant in the Appeal.



**Appendix F**

***Related Proceedings Appendix***

As stated on page 3 of this Appeal Brief, to the knowledge of Appellant's counsel, there are no known appeals, interferences, or judicial proceedings that will directly affect or be directly affected by or have a bearing on the Board's decision regarding this Appeal.